The OIL WEEKLY

JUN 9 1943

HUGHES ANSWERS THE CALL FOR ARMS

When the program calling for unprecedented quantities of planes, tanks, ships, trucks, etc., was outlined, it was evident that the oil to operate these vehicles of war would be just as essential as the vehicles themselves. Inasmuch as we were wholly engaged in the manufacture of indispensable tools for the oil producing industry, we were already an important cog in this emergency program.

The task before us, therefore, was to continue furnishing these tools and to devote whatever additional capacity we had or could develop to other vital war production.

Military regulations prohibit publication of complete information on war production, but this we can say:

We are operating four plants. Two are of company ownership, two of government ownership.

Our main plant is producing large quantities of items for the Army, the Navy, the Maritime Commission, and other war agencies—this in addition to the production of Rock Bits, Core Bits, Tool Joints, Valves, and other tools essential to the operation of the Petroleum Industry.

Of the two government owned plants, Hughes Tool Company designed and built the Hughes Aircraft Strut Division, and acted in a consulting capacity in the design and construction of the Dickson Gun Plant. We also furnished the entire executive and operating personnel for both plants. The entire production of these two plants, both of which are now in operation, goes to the Army Air Forces and to the Army Ordnance Department.

Our California plant (operated under the name of Hughes Aircraft Co.) is also completely devoted to war work, the major item now being the design and construction of large cargo planes.

Like other branches of industry, we have had our problems over machine tools, materials, technical procedures, and skilled labor. As we have solved these problems in the past, we expect to solve new ones as they arise.

We pledge our facilities and our manufacturing skill to the fulfillment of the emergency program—and we hope that our broader experience will enable us to render the Petroleum Industry still greater service after the Victory is won.

HUGHES TOOL COMPANY

Houston Texas

Senior Organization in Men and Management for

HUGHES AIRCRAFT STRUT DIVISION — DICKSON GUN PLANT — HUGHES AIRCRAFT CO.

2.4 MILES
OF CASING CEMENTED IN
82 MINUTES

With high bottom-hole temperature,
Unaflo cement remained fluid and pumpable

In the Old Ocean Field in south Texas, 12,709′ of 7″ O. D. casing was cemented with 1200 bags of Unaflo cement in 82 minutes. Bottom-hole temperature was close to 300° F.

Even though this was a two-truck job, the cementing crew had to work smoothly to complete it in such a short time. It was important that the cement slurry remain fluid and pumpable throughout the operation. It did. *Improved* Unaflo, the cement with a retarded set, was used. From the time mixing began until cement plug reached bottom, only 82 minutes elapsed.

Today, more than ever, it is important to safeguard vital drilling equipment. Delays and shutdowns can mean plenty of trouble. It pays to be safe. It pays to make sure, by using a cement with a high factor of safety. That means *improved* Unaflo, the cement that remains fluid and pumpable for extended periods under different hole temperatures and pressures.

For more details on the advantages of Unaflo oil-well cement see COMPOSITE CATALOG. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Amicable Building, Waco; Oklahoma City; Kansas City; Chicago; Birmingham.

You Get These Extras in Improved *Unaflo*

Characteristics

Composition is more uniform.

Reaction to different mixing waters found on different jobs is more uniform.

Retardation of setting time under different hole temperatures is more uniform.

Stiffening of slurry is not merely "slow." It is delayed, postponed, *retarded*. It remains fluid and pumpable for period of retardation, then hardens normally.

Advantages

Less mixing water required for sustained pumpability.

Stronger, denser, more impermeable seal is obtained with the heavier slurry.

Fluidity is maintained under different hole temperatures and pressures.

Pumpability is maintained after shutdowns for extended periods.

Factor of safety is higher.

OW-U-34

IMPROVED **UNAFLO**

PRODUCT OF UNIVERSAL ATLAS CEMENT COMPANY

Specialized Oil Publications
THE GULF PUBLISHING COMPANY

THE OIL WEEKLY

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LOOKING AHEAD
. . . with the Editor

WIRE rope is indispensable equipment for the oil industry. It is also being called upon to fill the place of much cordage, unavailable through enemy-held raw stocks. Wire line itself is restricted as to manufacture due to need for the same steel elsewhere in war work. And oil finding and production, imperative if the machines of the fighting forces are to operate, steps up the demand on existing wire lines by requiring that they run over worn sheaves, in units badly in need of rehabilitation and maintenance, and that they deliver the utmost service and reliability right up to the point of failure.

How to inspect wire lines, sheaves and line working conditions to obtain optimum service and extend wire-line life will be the subject of a series of short articles, based on many years of study of wire rope use. The series will begin next week. Follow its recommendations and you will reap dividends.

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840,000 POUNDS OF PIPE IN TEXAS' DEEPEST HOLE

. . . ALL Floated and Guided by LARKIN EQUIPMENT

To Larkin Floating Equipment was entrusted the responsibility of safely guiding and floating the heavy strings of casing to cementing depth on the J. S. Abercrombie McDonald B-1 at Old Ocean. This well sets a new Texas depth record, drilled to 14,378 feet, 600 feet deeper than any previous Texas hole. (After testing lower formations, the operator plugged back to the fields regular deep producing strata.)

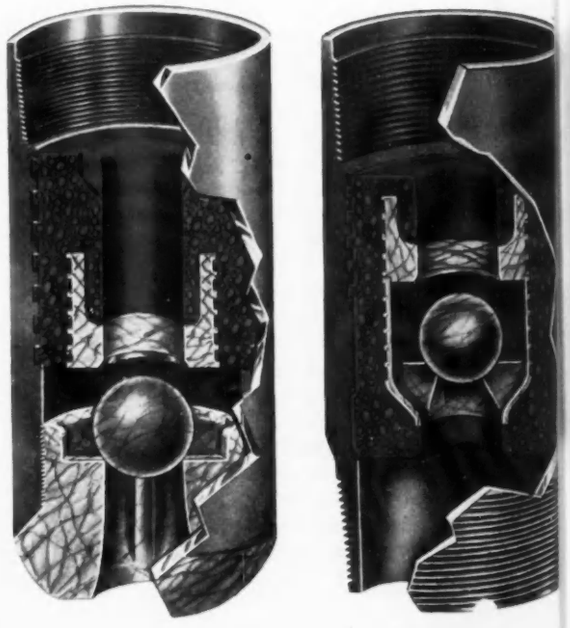
The casing program and equipment used on this record well was:

2,227' — 13 3/8" 54.5 lb. Casing
1 — Larkin Float Shoe

8,916' — 9 5/8" 38.93 lb. Casing
1 — Larkin Bakelite Float Shoe
1 — Larkin Float Collar

12,709' — 7" 28, 29 and 30 lb. Casing
1 — Larkin Bakelite Float Shoe
2 — Larkin Float Collars

The successful landing and cementing of these strings is a testimonial to the strength and efficiency of Larkin Float Equipment and to the skill of the operators who ran them.



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The Changing Panorama

New PAW Orders Help Small Operators Most

THE several recently issued PAW orders (amended P-98-b, PAO-11 supplements Nos. 7 and 8, and the creation of tubular goods stock piles) materially simplify the procedure for obtaining operating equipment and for securing development permits, especially in the case of small operators who are given special concessions. Generally speaking, the orders reflect a trend toward less Washington interference, less red tape and less paper work, by eliminating additional operations from control and by giving district PAW offices authority over additional phases. (In this connection, watch for further decentralization of PAW at an early date. All PAW district offices probably will be given the same authority granted District 5 a short time ago.) These are moves in the right direction, which should encourage development and wildcat work, and particularly by small operators.

The special concessions granted to small operators show that PAW has the interest of this group in view, and that it realizes their importance to the industry and the operating difficulties peculiar to their position. There should be a fairly strong and favorable physchological reaction to this trend, for it is acknowledged that many little operators have neither the time, manpower or inclination to fool with all the red tape, delay and paper work. Consequently, they have shrugged their shoulders and failed to apply for applications to do this or that. Relaxing of requirements should at least partially cure this situation.

The amended P-98-b, for instance, requires that larger operators must file a detailed list of their material needs four months prior to the next calendar quarter. But small operators do not have to do this until one month before the material is to be delivered. Other phases of the order also benefit the small operator most. For instance, approval by PAW is required only on larger purchase orders. Since purchases of small operators are smaller, because their requirements are less and more frequently for stripper or shallow wells, they are likely to feel the benefit of these requirements more frequently than large concerns.

With the issuing (THE OIL WEEKLY, May 24, page 37) of supplements Nos. 7 and 8 to PAO No. 11, PAW completed the relaxation of its 40-acre spacing regulations in practically all the more prolific shallow oil producing areas, and again the small operator benefits most for they applied to areas where he is most active. These orders should result in the stimulation of development in these areas, although PAW has been very liberal in granting exceptions, as both PAW and the operators are relieved of much paper work and red tape through elimination of the necessity of filing for exceptions on everything less than 40-acre spacing.

The definite announcement of plans to establish a 30,000-ton tubular goods stockpile (page 33) is another important move, and again it is most beneficial to the small operator. These stocks will be available to all operators who drilled less than 40,000 feet of hole in 1942, but only for emergency needs to those who drilled more than 40,000 feet of hole.

New Discoveries Highly Important

COMPLETION of three West Texas discoveries in the Ellenburger within two months and the recent finding of sizeable production in the Paluxy, Rodessa and Travis Peak formations in East Texas are exceptionally important developments. They occurred at a most opportune moment and will have far-reaching influence on future prospecting.

These discoveries are the most encouraging indications of sizeable oil reserves that have been found in some time. Although wildcat operations currently are lagging behind levels of a year ago, prospects that more oil may be found this year than in 1942 have suddenly shifted to the favorable side as a result of these new fields.

The strikes will have an important physchological influence on the mental attitude of the industry, which Wallace E. Pratt (page 9) states may be a more imposing barrier to the finding of oil than geologic conditions. For a couple of years the industry has been discouraged about its prospects for finding additional large sources of oil. These strikes will certainly result in intensified prospecting for both West Texas and East Texas, which did not appear in the cards a few months ago. But perhaps more importantly, they will cause the industry to look at the deeper horizons of other regions for possible production and to have renewed confidence in its ability to find oil.

Low Fuel Prices Hurt Coal Industry

ARTIFICIAL holding down of fuel oil prices reacts to the disadvantage of the oil industry's competitor, the coal industry. Low fuel oil prices tend to retard conversion of fuel facilities from oil to coal despite current shortage of heating oils.

Competition between the two industries has been largely based on relative cost of production, and coal, having to employ comparatively large number of men, has had a definite disadvantage. As a residual product of petroleum, fuel oil has been marketed at whatever price was found necessary to dispose of it, and such prices are now perpetuated under government price ceilings.

In 1918, coal's share of the total energy market of the United States was 70 percent. By 1941 it had fallen to 49 percent. The amount of fuel oil consumed in the United States in 1940 was equivalent to 125 million tons of bituminous coal, an increase in displacement of coal over 1923 of 88 percent. For the 17 years from 1923 to 1940, based on the rate of fuel consumption in 1923, coal has lost 463,000,000 tons to fuel oil, or a $582,000,000 market, of which about $511,000,00 would have been in wages.

At the same time, the coal industry has faced similarly severe competition from natural gas. In 1941 natural gas, equivalent to 87,000,000 tons, was used. This was an increase of 217 percent over 1923. Totals for the 18 years from 1923 to 1941, based on the rate of natural-gas consumption in 1923, would show the displacement of 443,000,000 tons of bituminous coal during the period, a loss of revenue to the coal industry of $823,000,000, of which $494,000,000 would have been in wages.

Although it is not the only factor, the price of coal to the consumer is recognized as the dominant element in the competitive situation. For this reason coal is under extremely heavy pressure to hold cost of production to a level

that will be inviting to the public. Otherwise, it will lose in income and wages through reduced consumption. The situation can be improved only by higher prices to coal's competitors—fuel oil and natural gas.

Oil Concern Aided North African War

SOCONY Vacuum Oil Company continues to operate in Africa, the Near East, and Turkey, supplying important quantities of oil products for military purposes and for such civilian needs as the military regards as essential, according to the recently issued report of the company to its employes. "Of course, the European market is closed," the report stated, "except for England and Portugal, and lack of transportation has reduced the sales in Latin America."

"In the Far East," the report continued, "the company's operations are carried on by Standard-Vacuum, which is owned jointly by Socony-Vacuum and Standard of New Jersey. Standard-Vacuum has been forced out of territory occupied by the enemy, which means that it is shut out of China, Burma and the East Indies, and has lost its great producing fields and its refinery in Sumatra. In India, Australia, New Zealand and South Africa, however, its sales continue; civilian consumption has been curtailed, but military consumption has taken its place in nearly the same volume."

Additional information was given by Socony Vacuum in its annual report to stockholders, distributed recently, in regard to the current military operations in Africa. For many years prior to the entry of the United States into the war, Socony Vacuum had distributed its products in Africa, and had established an organization there which immediately became accessible to the Allies at the outbreak of hostilities. Because this organization was familiar with general conditions, it was called upon to make surveys in Africa, with officers of the Air Transport Command. Large supplies of aviation products were delivered in time to be of vital importance to the war effort.

Also, the company erected and operated for the government, additional storage and transportation facilities. Engineers, mechanics, and tank and truck drivers were rushed from domestic and foreign organizations to aid in this work. When American troops landed in North Africa, Socony Vacuum was able immediately to put at the service of the government its existing organization which, throughout Africa, has been and will continue to be of great assistance to our military forces.

During 1942 the company wrote off $12,767,070 from the reserve for contingencies, representing the balance of its investment in enemy-dominated countries, leaving a balance of $69,658,595. No increase in this reserve was made during 1942, as it was thought this balance would probably be sufficient to take care of possible additional losses arising from remaining foreign investments, including Standard-Vacuum.

Rising Absenteeism Must Be Attacked

ABSENTEEISM is up 56 percent over what it was before the war effort started, according to a recent survey made by the National Association of Manufacturers in 25 industrial units, including some oil companies. Chief causes of absenteeism were shown to be sickness, accidents, housing and transportation problems, high earnings, inexperience in regular employment, and irresponsibility. Some of these causes can be attacked directly and with intelligent handling should be reduced greatly. Others are hard to get at, but a determined effort is essential.

Health and safety measures, plus morale builders, can be utilized to reduce the percentage of absent workers.

From the standpoint of health and safety, the survey suggests: pre-employment medical examination; preventives of respiratory infection; convenient lunch facilities with balanced diets; sufficient time allowance for meals; proper ventilation; proper sanitation; plant medical supervision; plant nurses; adequate safety devices and instruction; adjustment of work schedules to prevent cumulative fatigue; and checkup of reported sick absences.

Morale can be helped by proper appraisal of applicants' aptitudes and responsibility, pre-employment explanation of rules and relation to war effort; information about relation of individual job to war; instruction of foremen on methods of maintaining morale; use of visitors from armed forces; information about ex-employes in service; monetary incentives; incentives other than monetary, and plant posters and other exhibits.

Making workers feel that they are absolutely vital to the war effort is the real crux of the situation. The survey concludes with the recommendation, "Once people are convinced that their individual work is of vital importance, there will be very little voluntary absenteeism. Visits of men back from the actual fighting front are worth more than tons of posters or hours of pep talks. If men in plants could see pictures of the tanks or the planes that they helped to make in action it would step up interest and morale amazingly. The big job is to bring home to the people the fact that they are a part of the show."

Oil Is Ammunition

TNT, the basic military explosive used in bombs, torpedoes and shells, is made from toluol. This means, therefore, that toluol is the one product that might be considered most essential to the destruction of the enemy. Practically all the toluol used in this war is being made from petroleum by oil companies.

Floods Break Other Important Lines

THE "big-inch" pipe line was not the only oil line to suffer from Mid-Western flood waters.

The Missouri went on a rampage two miles south of Orchard Farms, Missouri, and washed out oil pipe lines of the Ajax Pipeline Company and Sinclair Prairie Pipe Line Company and threatened a line of Stanolind Pipe Line Company.

The breaks occurred when the river cut a new channel to the Mississippi, starting at a point about 17 miles west of the Wood River, Illinois, refineries.

The Sinclair Prairie 12-inch line went out Saturday, May 22, and was not back in service until late Tuesday, May 25.

As the Sinclair Prairie line was placed back in service, the Ajax 10-inch line was disrupted, and was out of service until Thursday, May 27.

The Stanolind line, some distance from the Ajax and Sinclair Prairie lines, was threatened but probably was saved because it was given a measure of protection by a railroad line. Part of the railroad was washed out.

It was held probable that the new channel cut by the river will remain permanent. If this is true the pipe lines probably will be routed across the river on a bridge as the area has considerable quicksand. Old-time residents of the area said that in 1893 the river cut a similar channel in the same spot.

Mental Attitude Important Oil-Discovery Factor

United States experience indicates oil in the earth is abundant, leading to conclusion other nations could do equally as well if they sought it as diligently, and that national temperament imposes a barrier to oil finding more formidable than geologic conditions

REFLECTION upon the petroleum discovery and producing record of the United States as compared with those of other countries arouses a suspicion that physical conditions in the earth's crust impose fewer and less formidable obstacles to the development of commercial oil fields over the earth than some mental and social habits. If American experience is any criterion, oil in the earth is abundant. When we search diligently for it, we find it. Over most of the earth this diligent search has been wanting. Until the earth at large has been explored as the United States has been explored, oil will remain undiscovered no matter how plentiful it may be. National temperament may constitute a barrier to oil finding just as baffling as the most complicated geologic pattern. Whatever the geological conditions may be and whatever technique is employed, we find oil in the earth very rarely unless we have first acquired the appropriate mental attitude. The very state of mind of the social order as well as the individual is involved in successful oil finding. Numerous "oil needy" nations might have oil production of sizeable proportions had their nationals searched for it in the American fashion.

These interesting thoughts and subsequent expressions are expressed by Wallace E. Pratt, chief geologist of Standard Oil Company of New Jersey, in his book, "Oil in the Earth" (University of Kansas Press).

The United States constitutes only 5 percent of the total land area of the earth, contains only 11 percent of the total area of marine rocks on the earth, and only 15 percent of the earth's total area of important, marine-rock-filled sedimentary basins, of a character favorable for the occurrence of oil fields; yet the United States has furnished 54 percent of all oil discovered to date. Per unit of total area, therefore, the United States has found more than 20 times as much oil as has been found in the rest of the world, and per unit of area favorable for oil this country has found 7 times as much oil as the rest of the world has found. Should this discrepancy be interpreted to mean that the average square mile of our country has been endowed by nature with 7 times as much oil as the average square mile of other countries? Or does it mean that we have sought oil in the earth more effectively than have other nations?

There is little evidence to support a conclusion that America has been 7 times more richly blessed with oil than other countries. But there is abundant evidence that Americans search for oil more assiduously and find oil more effectively than any other people on earth. In fact, it is Americans who find the oil in the earth. In addition to the oil in their own country, Americans have found much of the oil in other countries.

If France, Czecho-Slovakia, Turkey, Italy, or Japan, countries in which current oil production is negligible in proportion to current requirements, were populated by Americans under American laws and customs, their aggregate output of oil today would probably equal that of a similar area in the United States. Without hesitation Americans would take a "turn-key job" to find a new oil field in any of these countries.

Exploration for oil in the United States is carried on freely and continuously by thousands of independent enterprises which drill, year in and year out, twenty or thirty thousand test wells (ten times as many as the Russians, for example) at no expense to the government. Inspired by the financial reward that comes with success, they punch down their wells in any unexplored territory whether the experts think well or badly of its promise. If the sand which constitutes the first objective fails to produce oil, the well goes on down anyway, just on the chance there may be some possible producing horizon at greater depth. The results from such drilling, whether success or failure, are known to everyone, and all use this information to guide future exploration. In such a system there is plenty of room for surprises, and surprises are, in fact, legion. Many unanticipated oil fields are found in this way, but, of more importance socially, the whole country is subject to thorough exploration and much new prospective territory is revealed where more intelligently placed tests can then be undertaken.

In the search for oil Americans have drilled approximately a million wells in the United States, more than 200,000 of which have been exploratory dry holes. As long ago as 1921 this country drilled 35,000 wells in a single year. No other country ever approaches such records. Eugene Stebinger calculates that whereas we have drilled one exploratory test for each 12 miles of sedimentary rocks, the rest of the world has drilled only one exploratory test for each 1100 square miles of sedimentary rocks. On the basis of exploratory wells drilled, the search abroad has been only about one percent as thorough as ours. Against our record of one well to each 12 square miles of sedimentary rocks, the British Empire has drilled one well to each 1000 square miles; Russia, one well to each 2000 square miles; Japan, one well to each 135 square miles; Germany, one to each 120 square miles. Is it strange in the light of this comparison that we have found more oil than all the other nations together?

One way to find oil then, is to drill larger numbers of exploratory wells. It is not any apparent dearth of oil in the earth that need give concern to society. At our present rate of consumption the probable ultimate oil resource of the earth, made available and freely distributed, should meet humanity's needs

for 300 years to come. The great difficulty is to find and develop these ultimate resources. Our present proved reserves, worldwide, are hardly equal to 20 years requirements. Americans, who have found the earth's oil in the past, face an even larger responsibility for the future.

From time to time our own government has manifested an interest in oil reserves outside our national boundaries. In 1920, when the Allies were engaged in dividing among themselves the oil resources of the territory taken from Turkey during World War I and later segregated as the British Mandate of Irak, our Department of State, in keeping with its long established policy of the "Open Door," insisted vigorously that in the disposal of these oil resources, Americans be given consideration among other nationals. Because of this and other pressures, the British finally accorded American capital a 24 percent participation in the exploitation of the oil resources of Irak.

South America

Again, in 1926, our government, through the Federal Oil Conservation Board, urged upon the American oil industry a policy of acquisition of foreign oil properties. Responding to the stimulus of this suggestion from their government, American companies did acquire and explore concessions in Mexico and South America. Moreover, they developed valuable oil properties in these countries. Unfortunately, after oil had been discovered on them and the previously trackless jungles had thus been made valuable, some of these properties were confiscated by the very government which had granted the concessions. These seizures were defended as imperative in the interest of national economy and no compensation to the owners who developed them has been forthcoming.

Under the stress of disturbed world conditions the former interest of the United States in the oil resources of Latin America has been crowded aside. Eventually this interest will surely be rekindled, however, and right of access to these resources assured to our nationals. The undeveloped oil resources of Mexico, Colombia, Ecuador, Peru and Brazil are so promising as to demand intelligent and thorough exploration. Their development will become imperative to the social and industrial economy of the Western Hemisphere.

Oil-finding and the development of oil fields, we repeat, are enterprises in which Americans excel. Most of the known oil in the earth has been found by Americans. Even the British, worldwide explorers as they are, have employed Americans in large numbers to organize and carry out the technical job of finding and developing oil fields. The skills which Americans have devoted to this task are not common to all peoples.

In the light of American experience in oil-finding throughout the earth, it is difficult to escape the conviction that other nations might have enjoyed similar advantages from abundant cheap, liquid fuels had they sought as diligently for oil in the earth within their own boundaries as we have in the United States. Surely, Germany, for example, could have developed large oil reserves in her own territory had she pursued American methods of exploration with as much vigor as she has waged war. Germany possesses excellent prospects for indigenous oil production; extensive sedimentary basins, studded with salt domes marked by seepages of oil. The nations surrounding her, including Hungary, Yugoslavia, Poland, even Italy and France, are attractive territory to the American wildcatter. Doubtless, Roumanian production in a free economy would expand materially. As a matter of fact, and as we have already observed, Americans in recent years discovered first-class oil fields both in Hungary and in Germany. Given free access and free rein in other European countries, Americans could almost certainly duplicate these discoveries elsewhere. These nations themselves could do equally well in their own land if they maintained free economies and adopted American methods. Japan has left unexplored so much promising territory in the Far East, including her homeland, that with such possibilities untested she can scarcely contend that she is driven to the conquest of the Netherlands East Indies by her imperative need for the oil British, Dutch and Americans have developed there.

Oil Will Be Found

Much more oil remains to be found in the United States in addition to the present proved reserve. Under the impetus of higher prices and the momentum of new discovery itself, once it is resumed, this additional oil will be found. Nevertheless, however much oil remains to be discovered, the supply available at low cost must finally be exhausted, unless our need for liquid fuel and lubricants ceases meantime. We have taken far more oil from our part of the earth than other great nations have taken from theirs. The prospect of exhaustion of our oil reserves has alarmed many people. What are we to do when our own source fails?

One of the first steps to be taken whenever scarcity threatens in oil supply is to develop fully the sources most adequate and best adapted to serve the principal centers of consumption; another is to distribute freely and efficiently the products from these sources.

These principal sources are the Near East end of the earth's oil axis for Europe and Africa; the Gulf of Mexico-Caribbean Sea end of this axis for the Western Hemisphere; and the Far Eastern portion of the Pacific oil province for the Orient. Whenever these steps are taken, scarcity will be put off many decades into the future. Judging from the experience of Americans in their exploration for oil over the earth, the undiscovered oil resources must aggregate hundreds of billions of barrels. The ultimate supply should be adequate for centuries to come. But these great potential sources of oil, as yet hardly scratched by the drill must be explored and developed and their output must be equitably and efficiently distributed. No individual nationalistic ambitions can be permitted to interfere. A truly "Good-Neighbor Policy" between this country and Latin America, for example, should come in time to envisage great imports of oil into this country from tremendous new oil reserves still undiscovered in Brazil, Peru, Ecuador, Colombia, Venezuela, Central America and Mexico. In exchange for this market outlet, Latin America would take reciprocal exports from this country and grant free participation to American engineering talent and financial resources in the formidable task of converting vast tropical wastelands into healthful, productive oil fields. Freely-functioning measures like these must be established for the full development of the oil resources of the Near East and of the Orient, and for the unrestricted distribution of products therefrom.

Oil Is Ammunition

The art of war since the birth of Christ has been changed and molded to entirely new patterns by only two great influences, namely, gunpowder and petroleum.

The invention of gunpowder was startling and revolutionary. It was recognized as purely a military weapon and did not materially enter into the economy and lives of the people for hundreds of years.

Gunpowder so utterly altered the complexion of war that it was recognized by military writers as the end of a period, a turning point in the method of conducting war.

Petroleum on the other hand slowly entered into the economy and lives of the people for almost 80 years before the military surmised that it would wholly alter the art of war. It is not fully recognized, even now, that petroleum has and will further change the conduct of war as much as gunpowder ever did.—JUDGE WILLIAM P. COLE, JR., *former member of House of Representatives from Maryland.*

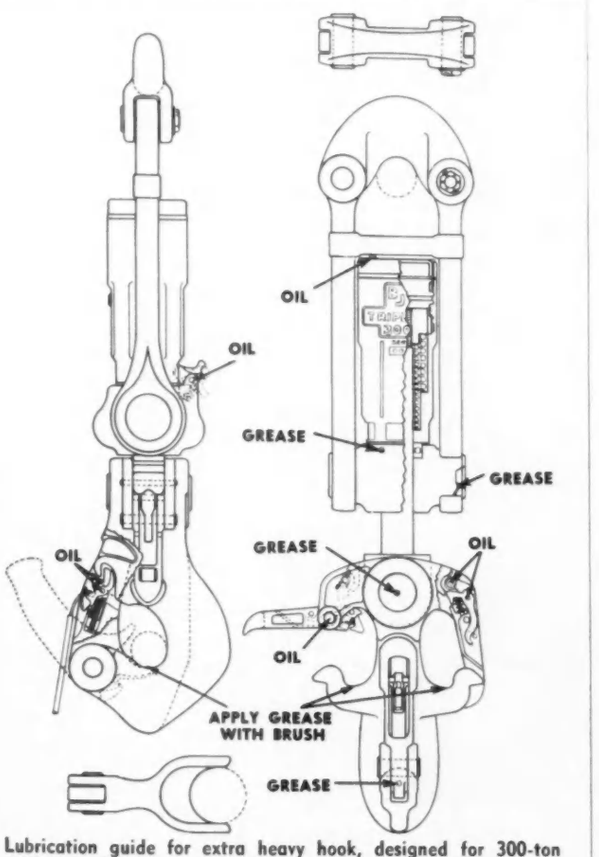
Lubrication and Inspection of Drill-Pipe-Handling Equipment

Lack of proper lubrication at regular intervals is the principal contributory cause to excessive wear of the lifting equipment on the rig. Simple drawings show points of application and proper types of lubricant for prolonging life of hooks, elevators and tongs

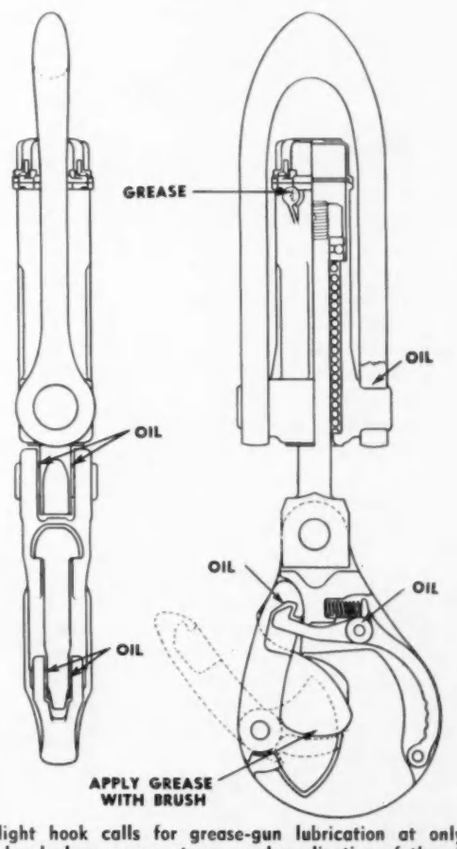
By GIRD E. MULLINIX,
Engineer, Byron Jackson Company

LUBRICATION of the proper type, properly applied and at correct intervals, alone can keep the drill-string-handling equipment at the peak of effectiveness designed into it, and upon the maintenance of which depends successful, economic drilling operations. Lack of lubrication at any critical point will quickly cause wear and can easily throw out of balance the distribution of stresses when handling a heavy string. A dry bearing point in the lifting equipment, while not evidencing that condition by squeaks or other noises, frequently concentrates wear upon a restricted area and results in the rapid distortion of the former smooth contours.

Because the rotation of the sheaves in the traveling block is readily apparent, the few lubricating points on this unit are usually serviced much as specified by its manufacturer, while the hook, immediately below, is less likely to receive either regular or correct lubrication at all the dozen or more bearing or working surfaces. For the hook there may be required two types of grease, each of these again being changed for the proper weight to fit summer or winter operating temperatures. Since the types of bearing surfaces in various makes of hooks change with the individual design, it is not possible to provide a general specification which will cover all uses. The recommendation of the hook manufacturer should be fol-

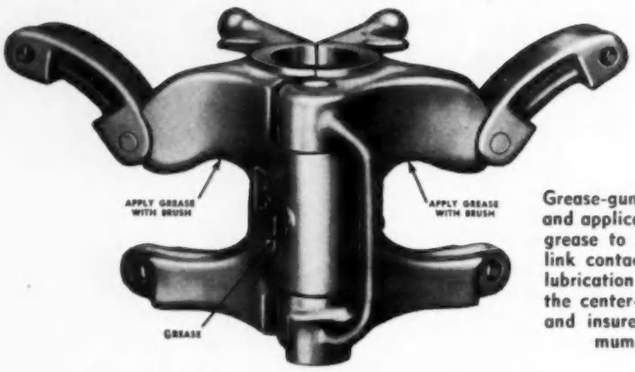


Lubrication guide for extra heavy hook, designed for 300-ton drilling loads. Four fittings for a grease gun, 7 points for oiling, and 3 contact surfaces between links and hook faces for coating with brushed-on grease provide for complete protection of all working areas and enable unit to give maximum service lite.



This light hook calls for grease-gun lubrication at only one point, brushed-on grease at one, and application of the oil can at 7 points to complete the lubrication job. The lubricant used for each point of application should follow maker's specifications, and should be applied sparingly at frequent intervals.

lowed closely, if maximum service with minimum wear is to be attained. For the bearing points equipped with grease-gun fittings, the proper seasonal grade of grease should be used, the gun being relied upon to furnish the force for expelling the old and worn grease and distributing the new lubricant around the wearing surfaces. This same type of grease, applied to those areas designated as grease-brush lubricated, may fall short of attaining its full protective purpose. Generally, a grease brushed on must have more adhesive properties than a gun grease, more body to resist being scraped from the surfaces it is intended to protect, and a higher resistance to dilution, cutting or emulsion when in contact with water. Some companies use the same lubricant specified by the manufacturers of their wire drilling line for coating surfaces such as the hook-elevator link contact, finding that although basic conditions vary greatly, the ultimate effect of the lubricant is close to that demanded by the service.



Grease-gun connection in the hinge, and application of brushed-on heavy grease to the lifting faces of the link contact faces provide for the lubrication needs of this side of the center-latch drill-pipe elevator and insure handling with a minimum of manual effort.

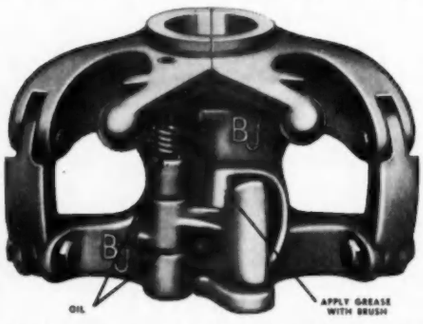
Oil for such points as demand this type of lubricant must be of the proper consistency, non-gumming under heat, with low pour point, and fresh stock. The practice sometimes resorted to of using reclaimed oil from engine crankcases, even if the material be strained, filtered, or even centrifuged, is one which effects a minor economy so inconsiderable when compared to the probable damaging of several hundred dollars worth of irreplaceable equipment that it should not be tolerated under any conditions. Even if the lubricating qualities of such reclaimed oil seem unimpaired, its liability to flushing from the bearing by even a small amount of water makes it a distinct hazard to effective equipment operation.

When handling tools from the tool rack to the field or returning them to the warehouse during periods of idleness, the condition of the lubrication points should be checked. If the unit has been carefully gone over when put into storage, the refilling of proper lubricant reservoirs (in some cases merely the clearance between two contacting parts) requires little time, and insures protection when leads are applied.

Tools to be handled should be checked to insure that all locking mechanisms are properly locked. This will aid in protecting against possible bending or damage in case the unit is dropped, and will also guard against accidentally dropping the tool should a winch line be attached to some portion of the unit which, when unlatched, provides no secure attachment for the line.

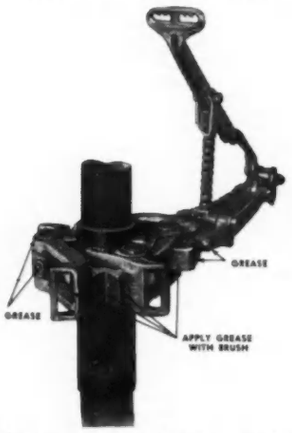
When unloading tools at the rig or warehouse, the lubricant in all the bearing points—as well as the entire unit—is protected against fouling if the transfer from truck be made direct to platform, instead of being dropped on the ground. Sandy soil, forced into bearing clearances by impact with the ground, rapidly wears away bearing surfaces, while mud, gumbo or clay can as effectively seal oil openings against entry of oil, and thus bring about a dry bearing.

Tools which have been in use for some time, even when properly lubricated, will show wear. As soon as this condition is apparent, it is advisable to have the units checked by some one familiar with the design to determine the amount of repair or replacement necessary to restore safe working conditions. Since the equipment is subjected to heavy shock and may be stressed to within the limits covered by design factors of safety, certain parts should be checked for surface cracks and also heat-treated to relieve all stresses. Welding or field heating of such equipment should be done only under conditions adapted to the material used, and by craftsmen familiar with the design, materials and operating conditions prescribed for the units being worked over.



Brushed-on grease for the latch and oil at the locking mechanism complete the round for this drill-pipe elevator, a well lubricated latch and locking mechanism being a safety measure as well as speeding pipe running.

Many units of the lifting equipment are handled on specially designed skids to facilitate dismantling and rigging-up, it being general practice to store these skids and their equipment during periods of idleness. Since hooks are usually stored flat, it is advisable to check them carefully for wear, rust and condition of lubricant while still hanging in the derrick in the normal (vertical) working position. This insures thorough distribution of oil or grease in clearances as they match up during the operating cycle, and eliminates the possibility of cramping or distortion closing off one portion of a section which should be lubricated. Clearances, play introduced through wear, and proper drainage of oil sumps can best be observed if the hook be still attached to the traveling block, with the unit lowered just enough to take up all wear which has occurred in the direction of lifting stresses.



Brushed-on grease at the faces of contact between latch and dog, with pressure-grease fittings to insure complete lubrication at the hinge pins in the unit insure a lubricant film to absorb the brunt of wear at these points.

If for any reason the rig cannot be used as inspection site, the equipment should be suspended from a hoist in the warehouse long enough to permit thorough inspection and lubrication, with special attention being paid to insuring seals on oil outlets to guard against draining off of the fluid when the unit is again laid flat.

Storage should be in a clean, dry space, as free of dust and dirt as possible, and with provision for covering with tarpaulin or heavy paper if the storage period is expected to be more than a few weeks. The units should be protected against excessive heat, which will tend to melt or drive off part of the lubricants applied at the time of being put in storage, and if immersed in water should be dismantled, cleaned, dried and thoroughly relubricated before being considered ready for the next job.

Utilizing Well Energy in Cleaning Flow Lines of Paraffin

Material and manpower saved when former paraffin cleaning method discarded in favor of specially designed go-devils propelled by pressure of well

By FRANK BRIGGS, Staff Writer

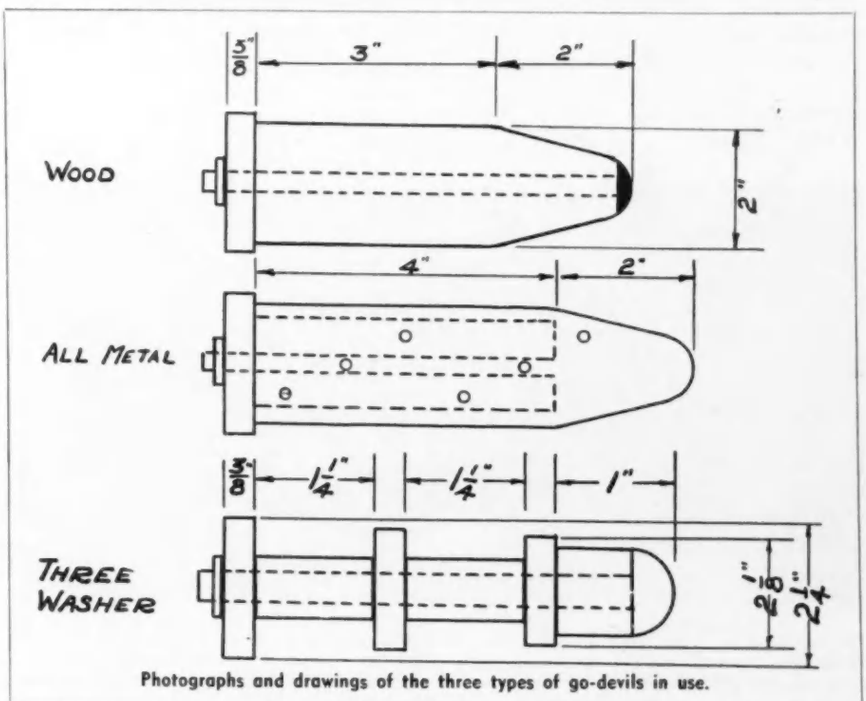
ONE major company, with a large number of wells on a lease located in the midst of an area noted for its paraffin problems, for several years had depended on regular and constant steam-cleaning of its flow lines. Two small portable boilers proved an efficient unit for the work, but with the coming of the war it was necessary to find means that did not involve so much manpower and materials. An idea developed. Having all high-pressure flowing wells on this lease, why not utilize this natural energy in cleaning the lines? After design and field experimentation, an efficient and practical method was devised.

Go-Devil Construction

The first problem was that of getting the proper cleaning tool. The natural basic idea was to have a free-movement piston, propelled by the gas produced with the oil, scraping the paraffin from the walls as it traversed the length of the flow line. To fill both jobs (paraffin removal and propulsion) the shape of the piston would logically be in the form of a bullet—with the washer or piston ring as the gas check and performing the double functions of scraping the pipe walls and preventing escape of the propelling gas around the projectile.

Accordingly, the first go-devil was fashioned in the shape of a bullet, from a short piece of hardwood. A washer made from rubberized fabric belting was rounded and bolted to the cap (or back) by means of a long carriage bolt run through a longitudinally drilled hole in the center of the bullet-shaped body. The overall length of this was approximately 5 inches, with a diameter of 2 inches designed for operation in 2½-inch flow lines. The diameter of the leather cap or scraper was such that small clearance was allowed between it and the pipe walls. Experience proved this type susceptible to failure of the wooden body through cracking; also it was very light.

Eliminating the detriments of being too light and the possibility of cracking, one of the present type of go-devils used on this lease is constructed from 2-inch pipe; the nose made by slitting, bending, welding and machining the pipe back to a finish. The leather washer is attached to the cap by means of a projecting bolt welded in the exact center of the inside bullet shell. Aside from the metal construction, this has the same appearance as the wooden type. But something new has been added. In small holes drilled into the shell, pieces of wireline strands have been fixed; this provides fingers that dig into the paraf-



Photographs and drawings of the three types of go-devils in use.

From the sending end . . . to the receiving end is but a hop and a zip for the go-devil with 200 to 1300 pounds of gas pressure chasing it. The end connections are ordinary stock items, easily operated unions with inside plugs; the bull-plug on the receiving end is the trap for the go-devil. Its impact is cushioned by the paraffin before it.

fin and loosen or dislodge it as the go-devil passes by.

A second, and later, design in use consists principally of three washers, spaced apart along a center bolt and held in position by a nut on the end. This type has weight but not too much of it, has three concentric scrapers of increasing diameter such that the "bite" or paraffin load is distributed over each. Similar to the action of multiple piston rings on a cylinder, this increased number of washers should also provide greater resistance to leakage of the motivating gas past the go-devil.

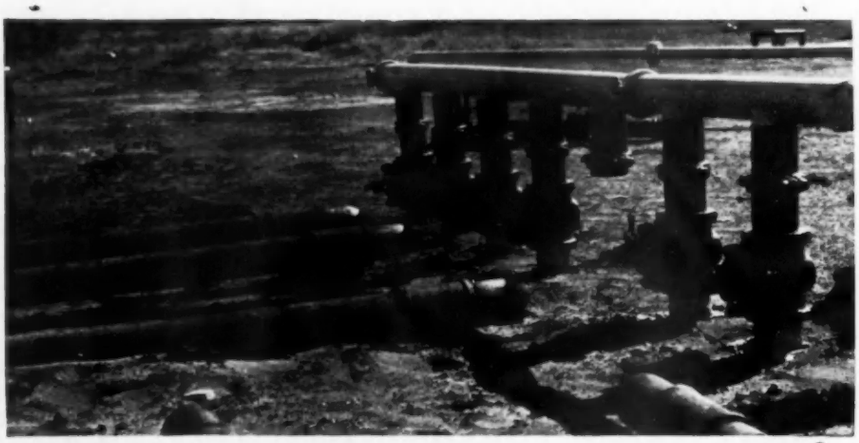
Method

Steaming paraffin, besides the portable boilers, also involved slow breaking down of the lines to be cleaned. Like firing a cannon, use of the natural energy of the well entails loading the bullet into a prefixed connection in the line, closing the breech, turning on the flow —and whisk the line is cleaned. The projectile is trapped at the other end of the line and the paraffin is displayed by the flow into the tank battery. And therein lies the only question mark chalked up against this method: is it better to get rid of the paraffin at once (as is done by the steam) or is it best to push the paraffin into the tanks, clean it out later and save the present time of man-hours and the use of bulky and expensive equipment?

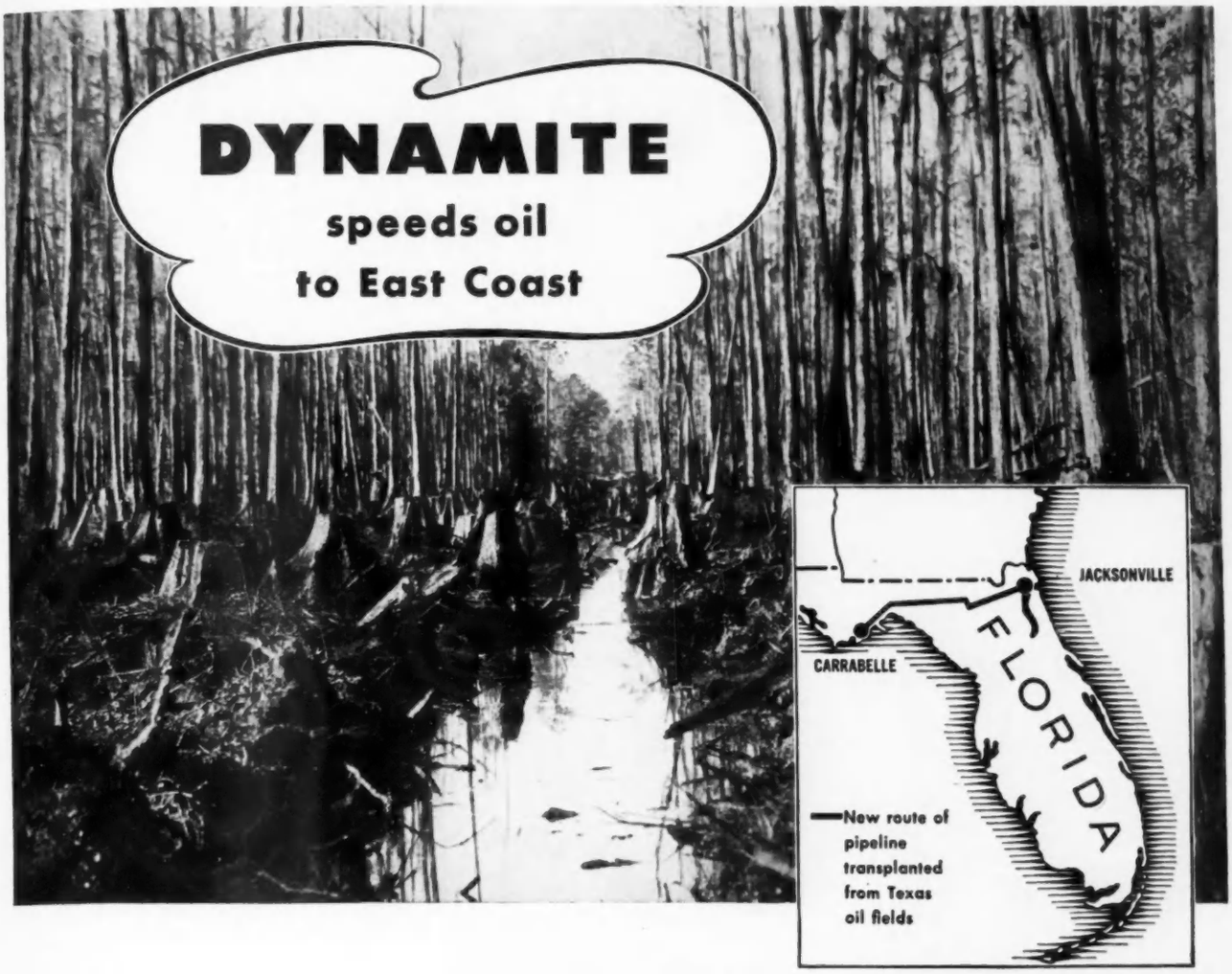
Should the go-devil stub its toe, this pressure relief valve provides the blow-off. Inserted in the line directly behind the starting point for the go-devil, the retaining nail in this valve is sheared should the pressure build up to a predetermined point above the safe pressure for the line.

The lease is divided into production sections, each with its own tank battery and gathering system. The flow lines converge into a manifold at the tank battery; each end of each line is fitted with an easily removable connection for the go-devil—one end for loading, the other for removal. The sending end is equipped with a plugged half union that permits operation when not cleaning the line. When in use for cleaning, the insertion of the bullet is followed by replacing the union and plug with a shear relief valve. At the other end of the line and just before it enters the manifold, a T-connection and extended bull plug provide the trap for the go-devil. From the T, the pipe is vertical and then bends up into the manifold. The fittings are regular commercial items and involve no expensive features. The pipe line must contain no sharp bends, and other than removal of these, no line revision is necessary.

After loading, the go-devil begins its trip when the well is opened up and, unless paraffin deposits are too great (or some other obstruction prevents passage) the complete length of the line is traversed in few seconds. The exact time depends, of course, upon the length of line, the pressure behind the valve and the amount of paraffin on the pipe walls. Should the going begin to get hard, pressure immediately builds up behind the washer thus tending to greater effort in moving the plug. The greater the resistance to movement, the greater the pressure; as the well pressure ranges from 200 to 1300 pounds, sufficient motivating force is assured. However, the flow lines were not designed for such pressures and the relief valve is set to go off before damaging pressures are attained.



The receiving or "trap" end of flow lines converging upon the manifold of a tank battery. These lines originally headed into the manifold below the ground; to provide accessible connections for the go-devil, the lines were raised, T-connections and bull plugs installed and the lines then U-connected back into the manifold.



OIL supplies vital to the war effort now reach the Florida east coast over a route requiring no tankers and safe from submarines.

Contractors were called upon by the Defense Plant Corporation to provide this route in a hurry. They did so by digging up 200 miles of abandoned 8″ pipe line in Texas and re-laying it across northern Florida.

In the new location they encountered densely wooded swamps. Trenching machines were of little use. But dynamite solved the contractor's problem—blasting a trench and removing roots and stumps in one fast, economical operation.

Dynamite was used again where the line crossed 210 feet of extremely hard lime rock on the bottom of the Suwanee River. Three rows of 1¼″ x 8″ sticks of Du Pont Ditching Dynamite were tied to a manila rope—the charge drawn across the river bottom—and fired. After several preliminary shots to knock down high ledges, a blast of 10 cases of dynamite gave a trench of sufficient depth to hold clamps and securely fix the pipe.

Dynamite has always had a definite place in large ditching and trenching projects in terrain such as this. But today, with equipment and manpower at a premium, *and speed essential*, dynamite's field of usefulness is larger than ever. Experienced Du Pont Technical Representatives will gladly advise you on how to use this concentrated, easily transported form of energy. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington, Delaware.

* * *

Anderson Brothers Pipe Line Contractors, Little Rock, Ark., re-laid the entire pipe line in Florida. Construction was under contracts by Trans-Florida Corp. for the Defense Plant Corp.

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EXPLOSIVES

SAVE FATS FOR EXPLOSIVES—*Fats are urgently needed for making glycerin—an essential ingredient in the production of high explosives. Urge housewives to aid the war effort by taking waste fats to their butcher.*

Towable Drum Cart Aid to Lease Work

Trailer hitch in center of handle bar (top) provides means of hauling drum behind automobile. Tool box made of slit piece of tubing is shown with lid open. Chain can be used to lock drum in frame, by fastening to convenient hooks at both ends of the narrow iron strip.

WHEN drums of oil or treating chemicals must be handled, frequently by one man now that available manpower has dwindled, some sort of convenient labor-saving device is necessary. One oil-producing company has built a drum cart for this purpose. It may be operated by one man without assistance or heavy weight lifting, and may even be hitched to the towbar of a car whenever a drum is to be moved a considerable distance.

The materials used in building this cart was selected from a junk pile during a salvage drive, and requires only a few pieces of pipe, a couple of strips of narrow angle iron, a sheet of tank steel and two large wheels and suitable axle. The wheels for this particular cart were picked up from a patch of weeds, and consist of artillery-type wooden automobile wheels. The wheel spindles were cut away from the king pin section, leaving sufficient stock behind the bearing cone so that the stubs could be welded into a short piece of tubing, which serves as the axle of the drum cart.

The cart frame was modeled somewhat after a warehouse hand truck, having handle bars for use when pushed manually. The end of the frame opposite the handle bars is built with a flat piece of tank steel inserted between the side members which serves as a platform or scoop to pick up the drum. Little effort is required to do this, as the scoop is almost at ground level. A slight tilt places the load where it can be placed on the cart platform easily. Pulling the handle bars down to about waist high serves to balance the load on the truck wheels so that all further physical exersion is directed toward pushing the cart. A towing eye is welded in the center of the handle bars so that, if necessary to move long distances, it may be towed behind an automobile.

A joint of four-inch pipe is welded between the handle bars as a cross member, and split with attached hinges to serve as a container for small tools, pliers and fittings.

Material and Time Saved With Unitized Engine Exhausts

TO ELIMINATE delay during rig-shifting, Rocky Mountain Drilling Company has unitized the exhaust-gas systems on its internal-combusion engines. The system has been designed so that no threaded units come in direct contact with the heated gases, making it easy to break the necessary joints, and so a part of the piping becomes an integral part of the engine skids and thereby also facilitates moving.

With the power units set at ground level, overhead exhausts would liberate the gases where they might be blown across the floor and possibly cause accidents, it is necessary to carry the fumes to a distance from the rig, using pipe laid on the ground for ease of installation.

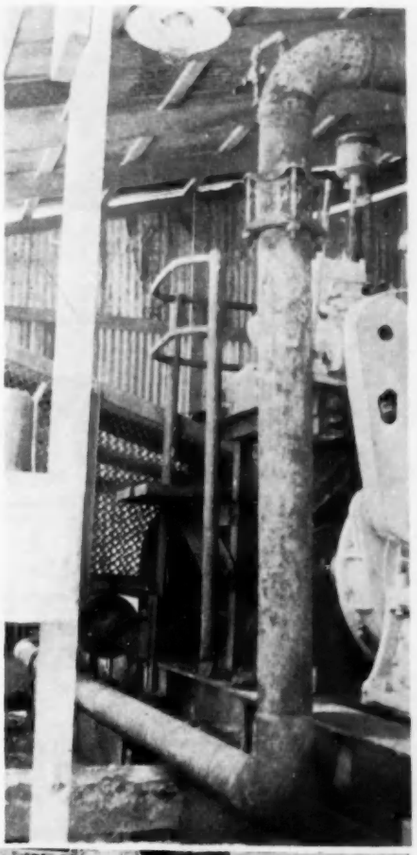
The initial lead of the exhaust line, from the engine manifold, is horizontal into a 6-inch line, where a sweep ell turns downward in a short nipple, carrying a sleeve-type joint using asbestos gaskets. The remainder of the drop is supported at its base, so that the joint is under no load other than gas back-pressure, and the adjusting bolts are run up only tightly enough to provide the desired pressure on the gasket.

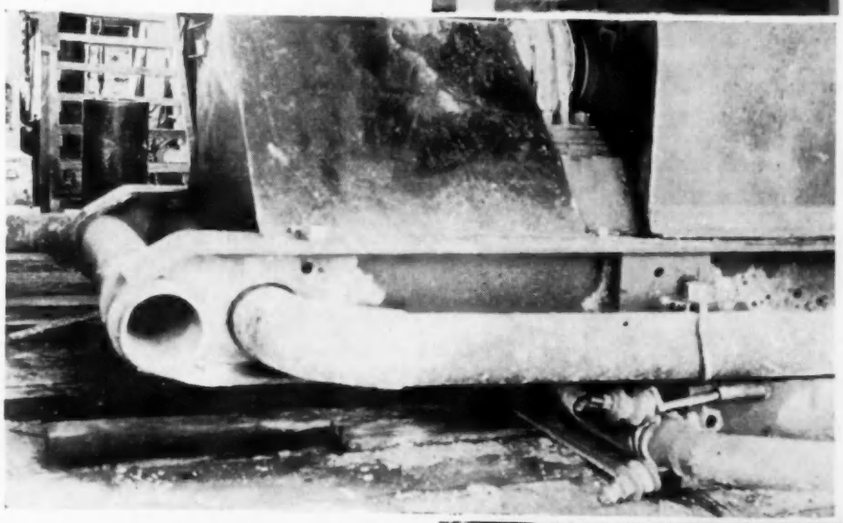
A welded ell at the base of the drop-leg carries a horizontal run, extending under the V-belt drive to the end of the engine skid, where another right-angle turn passes the line through a hole in the web of the base beam, the hole being made large enough to care for any line expansion without transferring stress to the drop leg. At the farther side of the skid base a second sleeve-type joint ties the line from this engine into the exhaust line from the other power unit, where a similar joint is incorporated close to the engine manifold to absorb expansion and vibration stresses.

Still at ground level, the line is carried past other equipment to a drum-type muffler, which the line enters at the end. One or more sleeve-type joints may be included in this line if length required breaking up into sections for better transportation. The muffler is not anchored, but set on transverse supports so that any expansion of the line simply moves the unit to compensate for the variation.

The exhaust is led from the drum through risers, topped with 45-degree ells to direct the fumes and noise in the desired direction. A heavy half loop, welded to the drum between the exhaust risers, provides means for attaching winch when line transporting the unit between locations.

Unitizing the exhaust line by means of compression-type sleeve couplings makes the job of making up or breaking out the line one for small socket or ratchet wrenches, instead of one for the welder or a gang of men with heavy tongs, and provides leeway for slight shifts in equipment without requiring any change in the connecting sections of exhaust line.





Junction between line and premanently set ell on manifold is effected through sleeve-type coupling (top picture), set as high as possible to reduce weight of projecting stub on engine. Welded joints and light-weight pipe simplify transportation of unitized sections.

Supported within the engine skid (center picture), the line from manifold to tie-in with other unit beyond the base may be carried with the engine when on the move, the section lying close to skid and being protected by clearance necessary to safeguard engine itself.

Drum-type muffler with dual outlets (bottom) is welded to stub pipe which is tired to exhaust main with sleeve-type coupling to snub vibration and permit quick sectionalizing for transportation. Lifting eye simplifies drum handling.

There are 6 good reasons why

Climax

Blue Streak ENGINES

are "tops" for ✓ Powering the Rig

✓ Driving the Slush Pump

Two Climax Model R6I drilling engines are running this rotary rig. One is driving the drawworks, the other a 7¼" x 10" slush pump. Power is transmitted to the drawworks and slush pump thru V-belt drives. In this application, the reverse clutch is built into the drawworks, and the entire outfit designed for depths up to 4000 feet.

An ever increasing number of contractors and producers are choosing Climax Engines for all power required in making the hole and driving related equipment. They find that every part of these engines, from starting equipment to mounting skids, has been selected and specified on the basis of actual field requirements.

Here are six of the many reasons why:

INSTANT STARTING . . . with the built-in gasoline motor.

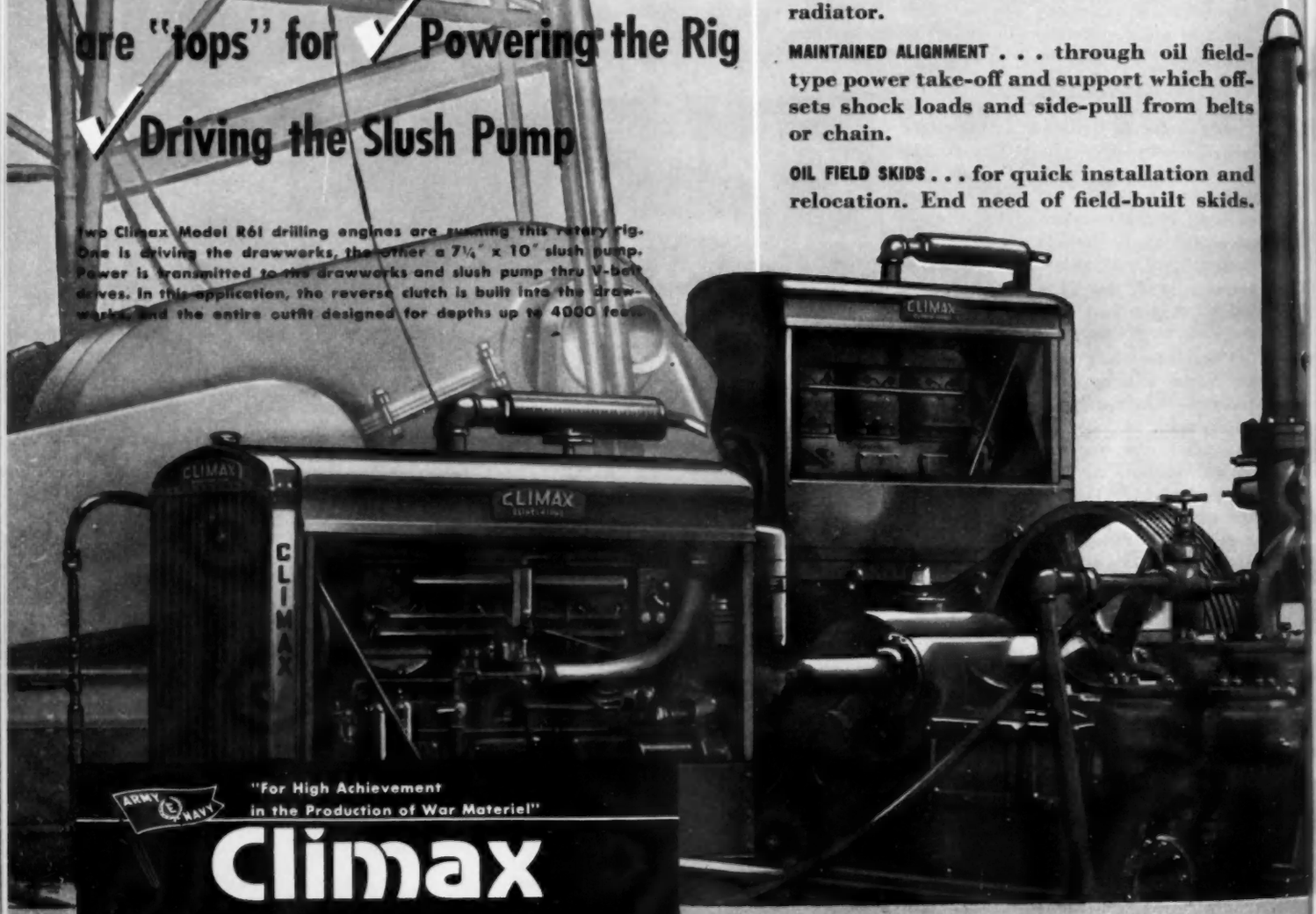
PEAK POWER OUTPUT . . . Always dependable—through dual ignition and the use of two spark plugs per cylinder.

SMOOTH OPERATION . . . with dual carburetion, an improved method of providing even distribution of fuel to all cylinders.

COOL RUNNING . . . under all conditions by the Climax cooling system. Water enters head where heat is greatest and is quickly circulated through pumps and larger capacity radiator.

MAINTAINED ALIGNMENT . . . through oil field-type power take-off and support which offsets shock loads and side-pull from belts or chain.

OIL FIELD SKIDS . . . for quick installation and relocation. End need of field-built skids.



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Gas Repressuring at Glenn Pool

By K. B. Barnes, Gulf Oil Corporation
and
J. F. SAGE, Sinclair Prairie Oil Company

GLENN POOL was the first major oil pool in Oklahoma. Original development took place mainly during 1906-1909. Peak production has been reported as 117,400 barrels daily in June, 1907.

The southern portion of the pool, covering 8100 acres, is the most prolific sector. The North Extension area covers 8400 acres. Oil-production and well-completion records for early years are very incomplete. However, it is believed the southern sector has recovered at least 25,000 barrels per acre to date while recovery from North Extension has been about 4000 with total for entire reservoir in the order of 222 to 236 million barrels. The reservoir is of gas-expansion type and the southern sector contains an unusually thick section of oil sand.

Systematic gas repressuring or "gas-drive" operations were started in May, 1940, and very successful results obtained. By April 1, 1943, the repressure effort had been expanded to cover work done by 7 companies on 18 leases, with a total of 2000 acres partially under repressure operation. A total of 308 old oil wells are being affected, while 51 new oil wells and 65 new input wells have been drilled. The production of these projects was 714 barrels daily before repressuring. During March, 1943, the average production was 1983 barrels per day, or an increase of 1269 barrels. An average of 1.42 tons of steel, in majority consisting of second hand light-weight casing, was used per barrel per day of increased oil rate.

This paper was read before the American Petroleum Institute Division of Production, Mid-Continent District, Tulsa, May 20, 1943.

THE principle oil-producing horizon of Glenn pool is the Bartlesville sand, locally designated as the Glenn sand. Other formations which have produced minor amounts in small, localized areas within the pool are the Red Fork, Taneha, Dutcher (mostly gas) and Wilcox.

The accumulation of oil at Glenn pool is due, in broad viewpoint, to the Glenn sand thinning or pinching out up dip into shale to the east and north. This wedge or pinch-out formed a stratigraphic trap, the detailed nature of which has been discussed by Wilson.[1] However, within the extent of the trap itself there is one large area which contained a greater thickness of clean sand, and of greater permeability and porosity. This more prolific oil productive area, the northwest part of Township 17n, Range 12e, is located approximately midway between the pinch-out to the northeast and the occurrance of edge water down dip to the southwest, and commonly is designated as "Glenn Pool." Northward the thickness of clean oil sand and the permeability and porosity becomes less and that producing area (the southwest portion of Township 18n, Range 12e) usually is designated as "North Extension." Actually "Glenn Pool" and "North Extension" are one common reservoir.

The situation is shown by the isopach map of the pool and the surrounding territory (Figure 1). The isopachs are constructed on the basis of total thickness of Glenn sand from top to base. It will be noted that to the south and west of "Glenn Pool" the total thickness is in excess of 100 feet, while to the northeast it diminishes to negligible amounts or total absence.

Because of the lack of detailed sand records for the original wells, a detailed stratigraphic and lithologic picture of the oil-productive zones or "pay" units of the entire reservoir cannot be made at this time. Sufficient core analyses, electric logs, and drill cuttings from recent wells are available, however, to reveal that the reservoir is not one simple large sand wedge, thinning up dip to the north and east. Rather, it is a complex series or layers of sand deposits, each varying laterally rather widely in physical character and present state of oil and water saturation.

Available past production records do not reflect any close relationship between past productivity and structural position. Originally there may have been a number of small gas caps on local structural features. For example, recent core analyses have indicated the remnant of a small gas cap of approximately 40 acres located approximately in the center of the S½ of Section 9-17n-12e. Such condition might have been inferred from the original records which showed casing landed about 50 feet into the sand. Presumably this was for the purpose of shutting off gas. The core data here show the upper part of the sand to contain very little oil. No doubt other small gas caps, unusual shale and siltstone breads, local water intruded areas, etc., as well as the major item of lateral variance of the land layers or pay zones, will be found to exist from area to area throughout the pool.

Past Production Data

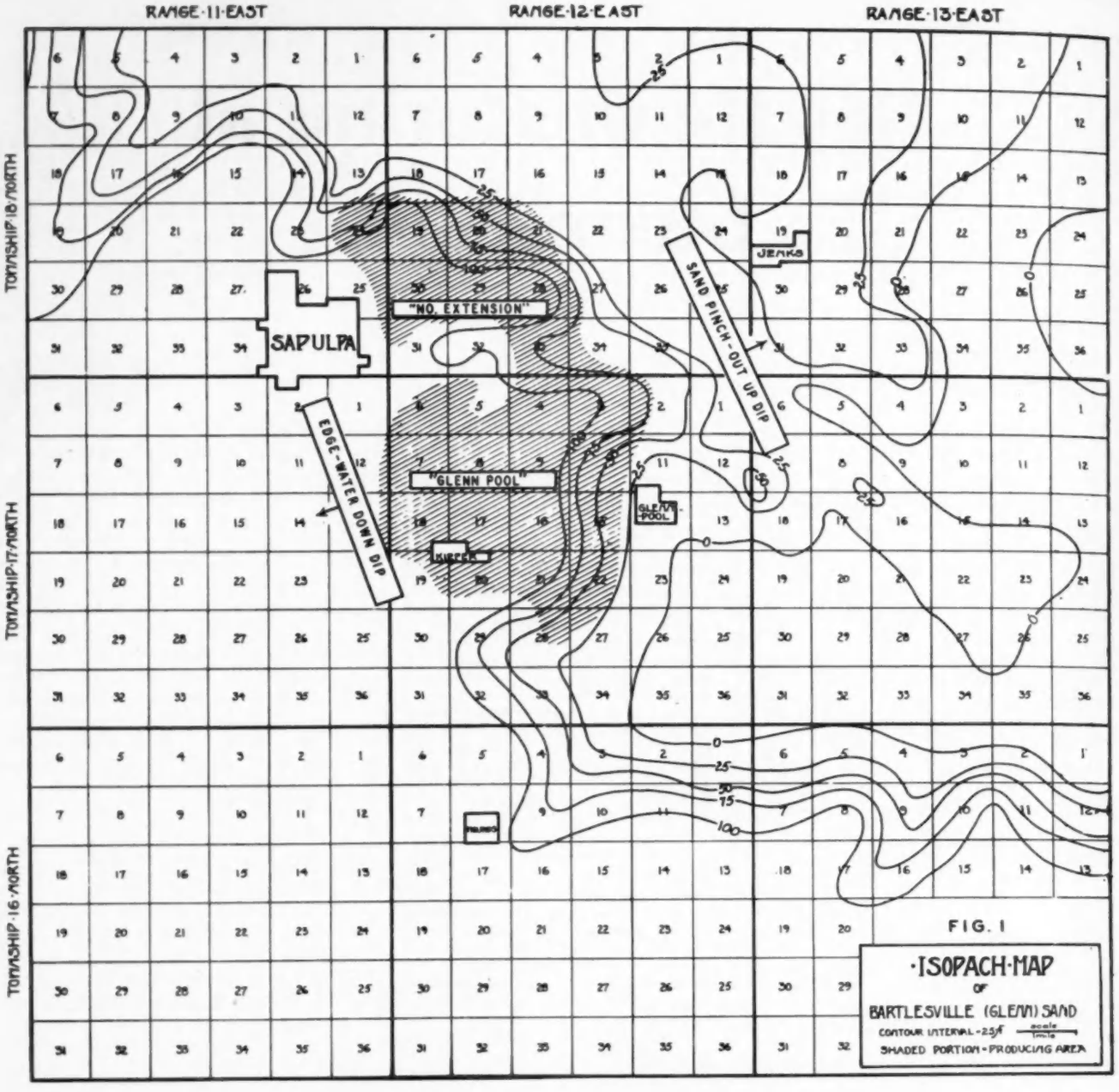
From available information it is believed that the original bottom-hole pressure was approximately 600 pounds per square inch. Since local gas caps existed, it is evident that the oil originally was completely saturated with gas, possibly about 350 cubic feet per barrel. At the present time the gravity of the oil is 36° API, and the viscosity about 5 centipoises. The bottom-hole temperature is 84° F.

The amount of oil which has been produced from the pool is not accurately known. One estimate is that the oil recovery to date is approximately 222 million barrels. In all probability this figure is the minimum. It is somewhat lower than that suggested from the productive acreage and the minimum average recovery per acre indicated for "Glenn Pool" and "North Extension" from available production figures for a number of leases well distributed through the reservoir:

AREA	Estimated Average Recovery, Barrels Per Acre	Number of Productive Acres	Accumulated Oil Prod. Bbls.
No. Extension..	4,000	8,400	33,600,000
Glenn Pool....	25,000	8,100	202,500,000
	....	....	236,100,000

A few properties, where the production data since either early or original

[1] "Geology of Glenn Pool," W. B. Wilson, Bull. A.A.P.G., Vol. II, No. 10 (Oct., 1927), pp. 1055-65. Also in "Structure of Typical American Oil Fields," Vol. 1 (1929), pp. 230-240.



completion are available, have had recoveries as follows:

LOCATION	Productive Acres	Record Commences	Accumulative Barrels Per Acre to 1-1943
"Glenn Pool"			
17-17N-12E	160	1907	23,300
17-17N-12E	160	1907	25,600
21-17N-12E	160	1907	11,200
15 & 22-17N-12E	160	1907	31,600
8 & 9-17N-12E	100	1907	43,000
8 & 9-17N-12E	160	1907	28,500
7-17N-12E	72.5	1907	26,800
4, 8 & 9-17N-12E	120	1908	22,400
5 & 6-17N-12E	80	1907	30,100
10-17N-12E	20	1907	48,300
20 & 21-17N-12E	160	1909	14,300
16-17N-12E	80	1907	33,300
"North Extension"			
24-18N-11E	90	1909	7,800
18N-12E	....	....	.....
20-18N-12E	120	1909	5,100
3-17N-12E	120	1908	3,900
21-18N-12E	70	1908	4,800
20-18N-12E	80	1909	6,100
10-17N-12E	80	1909	4,200
28 & 29-18N-12E	160	1910	2,800
29-18N-12E	70	1910	4,200
10-17N-12E	40	1909	5,800
19-18N-12E	60	1909	6,900
19-18N-12E	60	1909	5,800
20-18N-12E	70	1909	8,600
20-18N-12E	80	1909	4,700
20 & 34-18N-12E	80	1909	8,900

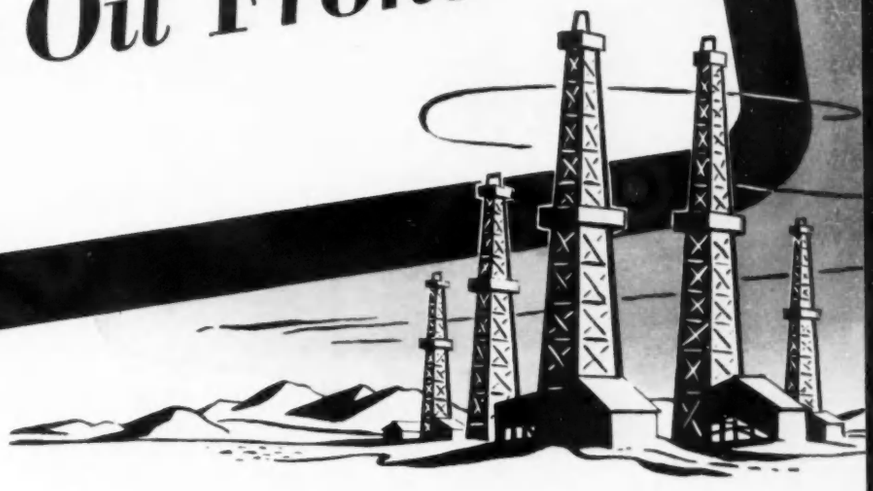
The first wells were completed in the latter part of 1906. A vigorous drilling campaign was carried on during 1907 and 1908. Peak oil production of 117,440 barrels per day has been reported for June, 1907. At most of the wells the sand was shot heavily and the wells flowed naturally at rates from 500 to possibly 4000 barrels per day during the first few months after completion. By early 1909 it is believed that the large majority of wells were produced by pumping. In 1912 the first gasoline plants were installed and widespread vacuum was applied by 1914. By 1915 or 1916 the gasoline plants were gathering the gas at as much as 20 inches of vacuum. Present-time vacuum application at "Glenn Pool" is as high as 26 inches and a strong underground vacuum exists in the reservoir.

Start of Repressuring

Some experimental air and gas injection attempts were made during 1927-1928, with old oil wells used for input; the results were largely unsuccessful. It is believed that the input gas quickly channelled through the upper pay section which was exposed in the heavily shot holes.

In May, 1940, the first carefully designed pattern-type repressure project in the pool was commenced on the L. R. Kiefer property, the SE 17-17n-12e, by Sinclair Prairie Oil Company. The lease had a settled oil production of 61 barrels per day. Five individual 5-spot patterns consisting of 5 input wells and 16 oil wells (4 were old oil wells) were drilled within the lease. Nine input wells also were drilled along the lease boundaries. Oil production rose rapidly and by the end of the year was 300 barrels per day. Repressuring on other nearby leases was followed by Sinclair Prairie Oil Company, N. V. V. Franchot, Gulf Oil Corporation, L. B. Jackson, Jr., Tide Water Associated Oil Company and Weber Oil Company. Whitehill Oil Corporation continued a repressure proj-

WARTIME STRATEGY on the Oil Front



WITH today's critical shortages of material and manpower the strategically minded operator is doing *everything* possible to save equipment—save time—eliminate costly operations in the development of his wells. *The peacetime savings effected by Johnston Testers are far more important to the operator and the nation in time of war.* Here's the blue print to follow for an efficient and economical drilling program:

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Casing programs can be cut to the bone by using the Johnston Tester to check production possibilities of every likely sand *without the need for setting casing.*

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Formation testing as the well is drilled can cut hundreds of man-hours off drilling time—eliminating extra time spent in setting casing, bailing or swabbing.

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Casing strings—production items and surface equipment all cost time and money. Reduced transportation facilities make it imperative that equipment requirements be lowered.

The use of the Johnston Formation Tester effects material savings on both domestic and overseas operations. Inquiries on how these savings are made will be welcomed.

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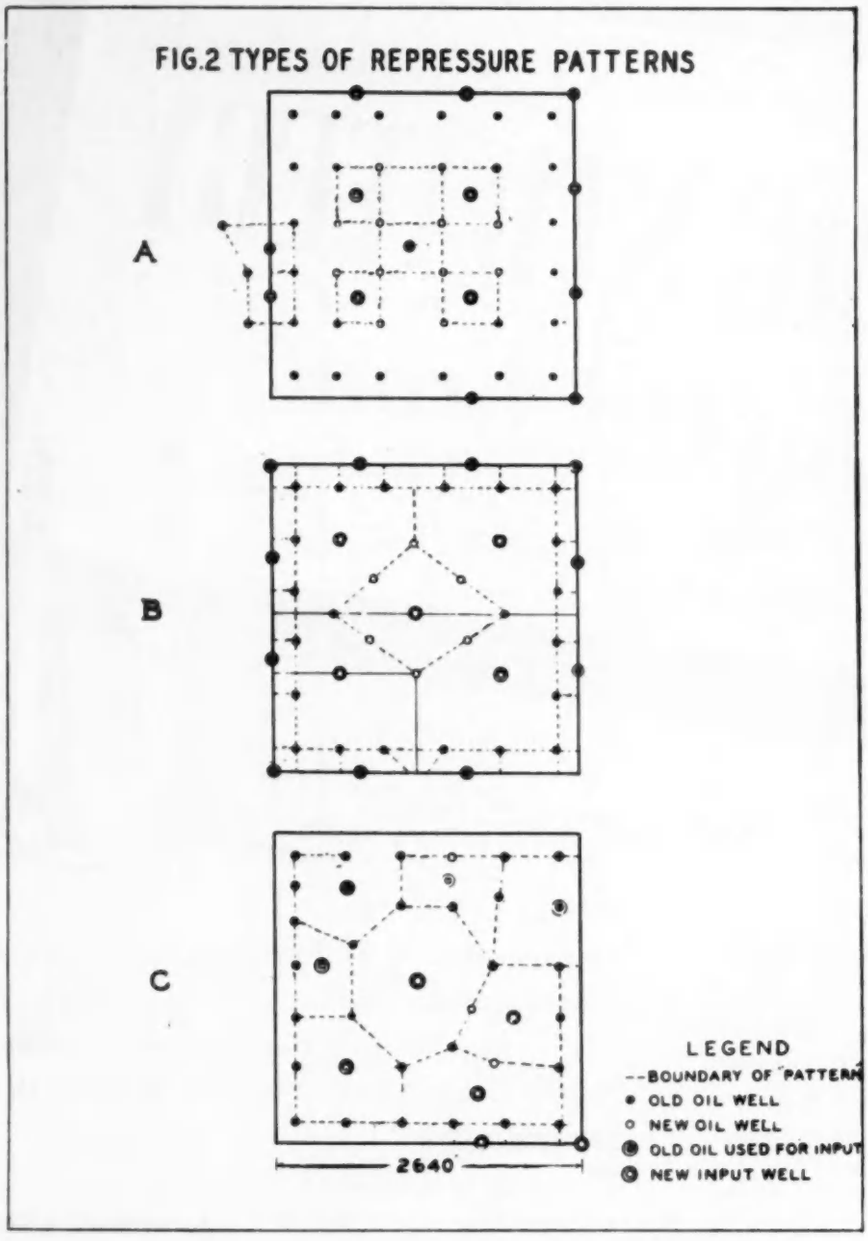


ect located northward from the central part of "Glenn Pool."

Drilling and Completion

The wells are drilled with portable cable-tool machines. A 10-inch hole is drilled to about 275 feet where a string of 8⅝-inch OD casing is set permanently to shut off a shallow fresh water sand. Open-hole drilling of 8-inch size is continued to the top of the Glenn sand where, for oil wells, the hole is reduced to 6-inch through the productive section. The producing formation is shot with 250 to 300 quarts of nitroglycerine, casing is run to the top of the sand, and the shot hole cleaned out.

In the construction of the input wells the procedure is the same until the top of the Glenn sand is reached. At that point the sand is cored, either with cable tools or portable rotary core drill. Either coring method usually yields excellent recoveries. A more detailed analysis can be made of the rotary cores; however, little difficulty has been experienced in obtaining sufficient test samples from the cable core biscuits for a sufficiently complete analysis.

Considerable effort has been made to improve coring procedure at Glenn pool since the first core test was made. Originally a bentonitic type coring mud was used, but later it was found desirable to employ a mud which has an API filtrate loss of less than 1.0 cc. One barrel of this mud is obtained by mixing ingredients with fresh water:

Low Filtrate Loss Coring Mud: 20 to 25 pounds starch-type mud material; 15 pounds Bentonitic mud material; 2.5 to 3 pounds sodium hydroxide; 10 to 20 barrels barytes.

The mud has a pH of about 12 to 12.5. Any filter cake remaining on the face of the sand later can be removed by washing down with a hydrochloric acid solution.

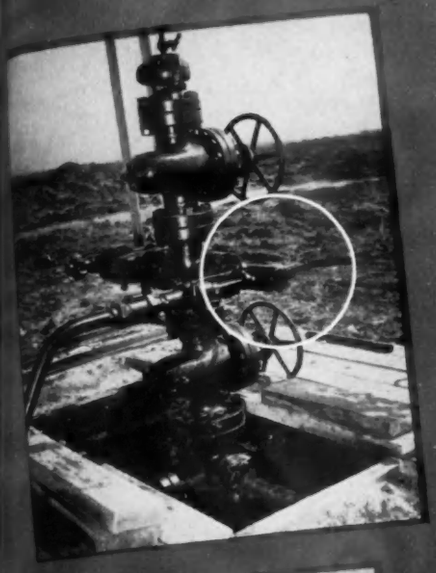
TABLE 1
Glenn Pool Repressure Data

Project Symbol	Months Since 1st Input	Size of Project, Acres	Average Oil Production Barrels per Day			Average Input MCF/24 March, 1943	MCF/24 Injected Per B/D Oil Incr. March, 1943	Produced G/O Ratio		Number of Wells					REMARKS
			Before Repress.	March, 1943	Increase			Before Repress.	March, 1943	Oil				Input	
										Old	New	Total	OWDD		
(1)	35	160	61	250	189	325	1.7	1100	1440	24	12	36	15	9	Project possibly complete
(2)	21	160	46	319	273	250	0.9	1045	1035	24	9	33	10	7½	Proj. poss. 90% complete
(3)	24	160	36	97	61	80	1.3	1470	1062	18	4	22	4	2	Proj. poss. 30% complete
(4)	13	160	52	87	35	75	2.1	711	1172	21	6	27	1	3	Proj. poss. 30% complete
(5)	23	40	11	21	10	20	2.0	2730	3900	8	0	8	0	½	Proj. poss. 20% complete
(6)	23	40	14	24	10	20	2.0	1570	917	9	0	9	0	½	Proj. poss. 20% complete
(7)	23	80	22	48	26	90	3.5	2045*	2835*	16	1	17	0	2	Proj. poss. 30% complete
(8)	17	80	43	183	140	156	1.1	628	426	10	4	14	0	4½	Project possibly complete
(9)	16	20	16	41	25	42	1.7	938	804	4	¼	4¼	1	1½	Project possibly complete
(10)	11	160	102	337	235	213	0.9	686	548	27	3	30	9	8¼	Proj. poss. 90% complete
(11)	16	160	60	116	56	101	1.8	833	784	21	2	23	3	5	Proj. poss. 75% complete
(12)	2	40	20	39	19	42	2.2	800	616	9	1	10	1	2	Proj. poss. 50% complete
(13)	4	160	45	72	27	139	5.1	1290	2750	24	5	29	1	5	Proj. poss. 50% complete
(14)	4	80	52	59	7	55	7.9	692	830	13	0	13	0	2	Proj. poss. 50% complete
(15)	16	60	40	137	97	99	1.0	450	526	6	3¾	9¾	0	3¼	Project possibly complete
(16)	31	120	25	45	20	75	3.8	2000*	2780*	26	0	26	0	2	Proj. poss. 50% complete
(17)	48	160	25	38	13	175	13.5	1200	3025	15	0	15	0	5	Loc. in "No. Extension"
(18)	10	160	44	70	26	37	1.4	1885	1200	33	0	33	0	2	Proj. poss. 25% complete
Total	..	2,000	714	1,983	1,269	1,994	Av. 1.6† Av. 3.0‡	Av. 1057† Av. 1225‡	Av. 1104† Av. 1480‡	308	51	359	45	65	

* Estimated. † Weighted. ‡ Arithmetic.

Cameron Flow Wings

SAVE CRITICAL STEEL WITHOUT SACRIFICING SAFETY



Production men, particularly those in high pressure areas where it has been customary to complete wells with extremely heavy and sometimes elaborate Christmas tree manifolds, are urged to consider the saving in critical steel made possible by Cameron Christmas Tree Flow Wings.

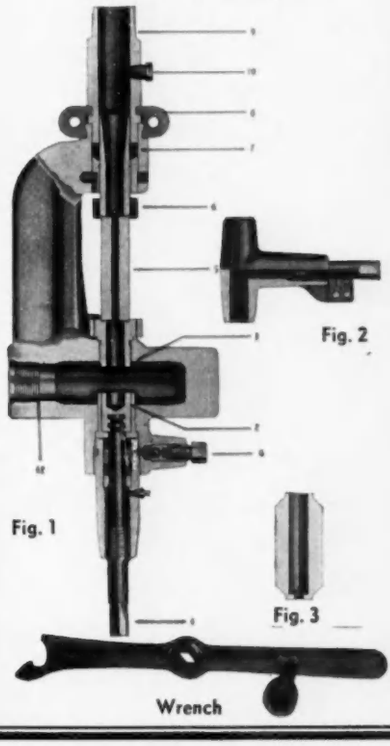
This unique accessory combines four essential Christmas tree fittings in a single compact unit: (1) An efficient wing valve that closes easily under full rated pressure; (2) A quick-change positive or adjustable choke, as desired; (3) An efficient 2-bolt flowline union that obviates the need for an additional union in the flowline; and (4) A bleeder plug to release pressure trapped in the flowline.

Changing flow beans in the Cameron Flow Wing is so simple that it requires only a fraction of the time required by conventional chokes. The valve section operates with surprising ease at full rated pressure. All parts in the assembly may be replaced in the field in a few minutes and at low cost without removing the unit from the well.

Cameron Flow Wings are offered in several screwed and flanged styles, ranging up to 10,000 lb. test. Like any standard fitting or valve, they may be incorporated in any manufacturer's Christmas tree.

REFERENCE TO FIGURES AT RIGHT:
1. Valve Stem; 2. Valve; 3. Valve Seat; 4. Clamp Screw; 5. Flow Bean; 6. Packing Feed Screw; 7. Clamp Screw Packing; 8. Two-bolt Union; 9. Outlet Connection; 10. Bleeder Connection; 12. Inlet Connection.

Cross-section view of a Cameron Type "D" Flow Wing



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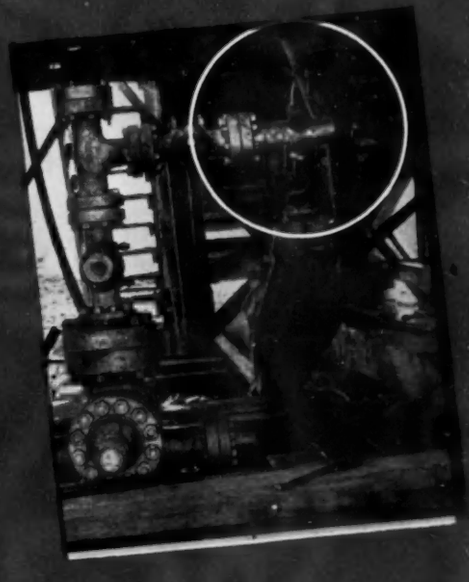


No attempt has been made to repressure the upper pay zone, which generally has comparatively poor oil saturation, except in a few instances not in the central part of "Glenn Pool." The input wells are cased through to the top of the main pay zone which is determined from core analyses, electric logs, or by examination of the well cuttings. Casing of 7-inch or 5-inch OD size or 4-inch line pipe is used for the injection strings, and is cemented with 25 sacks. The upper pay zone later can be opened for secondary-recovery attempts by gun perforating, and in which case the casing will provide a good contact for packer shut-off. A few of the input wells have been cased on top of the Glenn sand and a packer set at the main pay zone to exclude gas injection from the upper section.

An important phase of the operations is in cleaning out or deepening the oil wells in order that all of the oil sand open to the gas drive will be exposed for production. In the original drilling a large number of the wells only partially penetrated the sand. For a number of years at Glenn Pool it has been profitable to deepen such wells in order to expose additional sand. Deepening of any wells of shallow penetration on a repressure project usually is done at an early date in order to obtain full benefit of the gas injection. Likewise, it also is desirable to keep the wells free of cavings since the repressuring has not built up sufficient head so that satisfactory production can be obtained unless the wells are pumped from very close to bottom.

Well Spacing

The well spacing or "pattern" of input well locations relative to the oil wells has been varied. In general the size of repressure patterns which has been used can be, in comparison with operations elsewhere, classified into those of close and those of moderate size. Originally much of Glenn Pool was drilled on a basis of 9 oil wells to 40 acres, although on a large number of properties no drilling was done except along the lease lines. If the 9 wells to 40 acres arrangement for oil wells is continued in the repressure work, it is possible to drill 5 new gas input wells within a 160-acre pattern so as to form four alternate "5-spot" patterns. Some of the projects in Glenn Pool have followed this well-spacing arrangement, as illustrated under (a) in Figure 2. More "5-spots" can be formed on the 160 acres by drilling additional input wells, and correspondingly obtaining a direct drive of the gas over more area.

Other projects have followed spacing patterns of greater size, and with a greater percentage of the total area receiving a direct drive from input to oil well. One 160-acre property, which previously had oil wells only along the lease boundaries, was developed by drilling additional oil wells and input wells within the lease to form 5 repressure patterns and which resulted in a direct drive to the oil wells over virtually all of the area. This pattern is shown by (b) in Figure 2.

The pattern layout of other projects has varied in size from 5 to 26 acres per individual pattern. If the well spacing is not to be close, considerable variation in shape may be necessary on irregularly drilled properties to avoid plugging some of the existing wells. One example of a successful but rather irregularly shaped pattern layout is shown by (c), Figure 2.

Sufficient time has not elapsed to determine all of the relative economic and operational merits of the different well-spacing patterns that have or could be employed at Glenn Pool. The smaller patterns entail a greater development cost per acre exposed to direct gas drive. It is not yet determinable whether the smaller sized patterns will be conducive to better repressure control, and will yield greater ultimate recovery.

Some projects which have consisted of fewer but larger patterns have obtained oil-production rates as high or higher than other projects of equal total area but which have employed a larger number of smaller patterns. The total rate of gas injection in these instances has been about the same. However, the variation of the average oil- and input-well density among these projects has not been sufficient to indicate definitely at this time that greater efficiency in repressure control and recovery can be attributed to any one pattern in use.

Gas Injection

For one group of Glenn Pool projects a separate gas-injection system was constructed from a compression-type gasoline plant that had been in operation for many years. Additional gas for the system has been purchased. For another set of projects, small compressor plants have been constructed on various leases. The compressor unit has two single-stage cylinders, one for air and one to gather and compress casinghead gas. The compressed air and gas are co-mingled in discharge lines to the input wells. Due to scarcity of gas the compressor units are driven by electric motors. Two projects in the pool are served by air compressor plants. In the main, however, the repressuring is being done with natural gas.

For an individual repressure pattern of small size, covering 2.5 to 3.5 acres, injection rates of 25 MCF per day are used. For a larger pattern where an input well serves territory from 10 to 25 acres, current injection rates are 40 to 60 MCF per day and will later be increased. The injection pressure ranges from only 5 to 50 pounds per square inch except for one project mid-distant between "Glenn Pool" and "North Extension" where it is 225 pounds.

Gas injection to new input wells is started slowly, at 5 to 10 MCF per day, and the rate gradually increased to the desired amount within one to two months. A recording orifice meter with 7-day clock is set at each input well and operated during the first few months until the desired injection rate becomes constant. Subsequently, the recording meter is removed and weekly spot checks made to control the input to the desired rate.

Gas Production

Considerable effort is made in the "pattern" type of repressure operation employed at Glenn Pool to limit the gas withdrawals to equal amounts as between each of the oil wells affected by an input well. It is believed that care in obtaining equal withdrawals will do much in securing uniform and equal movement of gas to each oil well within a pattern and preventing premature channelling of the drive.

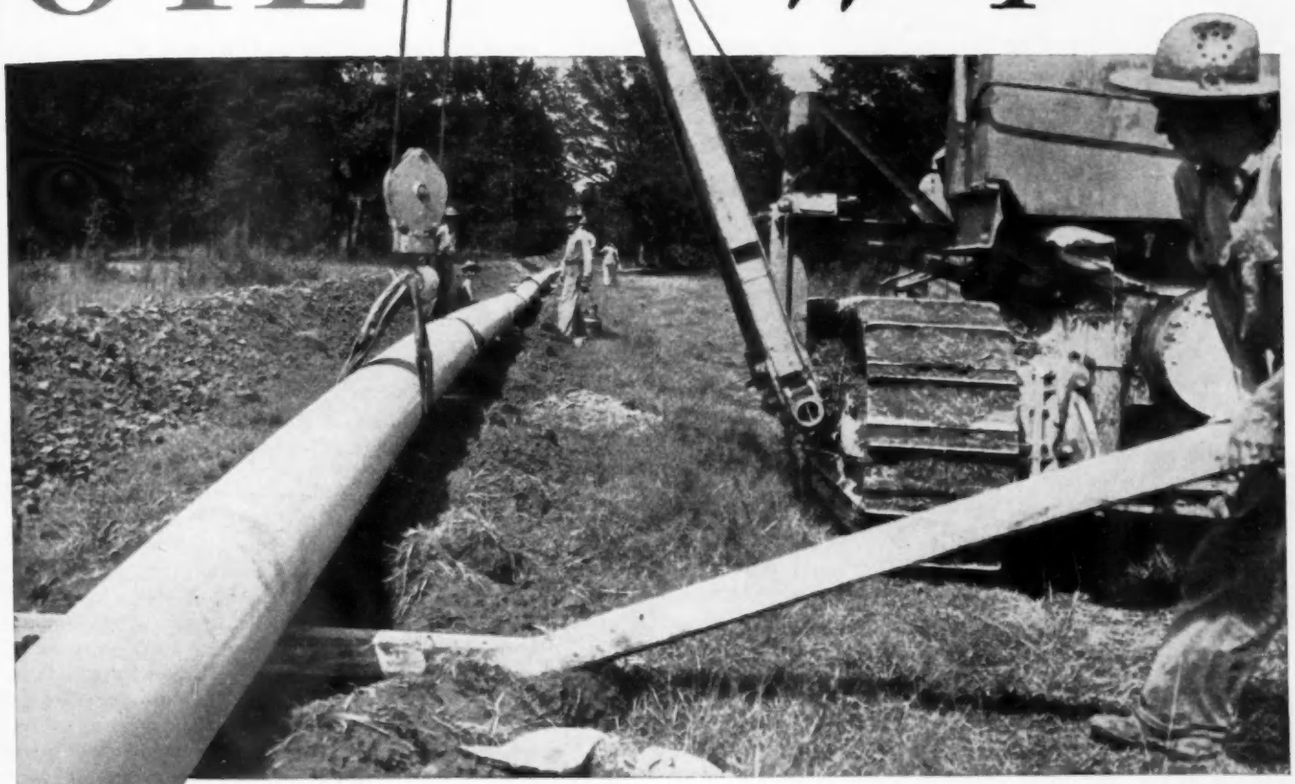
Control of gas withdrawal from individual oil wells is accomplished by installing a cock in the gas-gathering line from each oil well. The flow of gas through the cock or adjustable valve is determined once each week with a portable indicating orifice meter, and any necessary adjustments to obtain the desired withdrawal are made.

Cooperation Between Companies

With the intensive pattern type of repressure operation in use at Glenn Pool, and with existing diversification of leasehold ownerships, considerable opportunity is possible for the drilling and operation of joint interest wells along lease boundary lines. Such "line" input wells will affect substantial amounts of oil sand that otherwise would remain virtually dormant and would produce very little oil due to lack of effective gas drive. Full advantage has been taken of this situation and to date 23 input wells have been drilled by 5 participating companies on lease-boundary locations. In some cases the completion and operating costs on such input wells are shared by the participants, in others the cooperators have "swapped" input wells, that is, each drills and operates equivalent line input wells.

Sometimes the well spacing or pattern arrangement between leases has been such that new oil wells are desirable at the lease boundaries between two properties of different ownership. To date, three new oil wells have been drilled on lease lines, with arrangements made with the royalty owners and between the operators to account for the

OIL *on the Warpath*



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oil produced. The production is sufficient to justify the separate tankage and gauging necessary.

Exchange of sand and core records, oil and gas production and gas-injection data, and other pertinent information to conduct efficient operation of the line input wells are made between companies. Arrangements are in effect whereby the companies alternate in operating the meters and controlling the gas injection during certain periods.

Core Data

As already mentioned, core analysis data of the Glenn sand within the pool are by no means uniform, and the following discussion presents only more or less of a mean of the values found in the cores. In North Extension about 5 wells have been drilled in recent years to obtain core data. In general, the sand contains numerous shale breaks and laminations, and the clean sand footage, average permeability, and percent oil saturation are less than at "Glenn Pool." No secondary-recovery projects have been started in "North Extension," although there is one operation located approximately on the border with the "Glenn Pool" territory.

In the "Glenn Pool" or 17n-12e area, the effective productive thickness generally is greater and of much better quality. About 49 core analyses have been made in this area during the past two years. One group of 23 wells which was cored had the following average data:

Saturated sand, 137 feet; permeability, 102 MD; Porosity, 20 percent; over-all oil saturation, 28.5 percent, 443 barrels per acre-foot; total oil content, 60,691 barrels per acre.

Within parts of Sections 8, 9, 16, and 17 a series of tests have shown that the Glenn sand section, while including a total of 125 to 175 feet from top to base, more specifically consists of three separate oil-producing zones. Each pay zone is separated by more or less impermeable siltstone breaks. In some localities the siltstone breaks between the pay zones become more permeable, and the breaks and pay zones partially merge together.

Studies have been made, and are being continued for the purpose of determining if the oil-content values from the cores are representative of conditions in place.

Neither the thickness nor character of the three pay zones in the present repressure area is very uniform from even lease to lease. However, within certain portions of Sections 8, 9, 16 and 17 the following data are illustrative of the general type of conditions:

	Average For Portions of 2 Projects	Average For One 160 Acre Project	Average For One 160 Acre Project
Upper Pay:			
Thickness, Ft.	41.2	22	32.2
Average Perm. MD.	125	163	130
Average Poros. %	15.7	19.2	16.8
Average Oil Sat. %*	18.5	31.9	31.6
Avg. Total Water, %†	65.5	47.8	49.3
Main Pay:			
Thickness, Ft.	46.8	47	52
Average Perm. MD.	177	142	132
Average Poros, %	16.5	18.2	17.5
Average Oil Sat. %*	49.0	33.9	30.4
Avg. Total Water, %†	44.2	58.6	52.0
Lower Pay:			
Thickness, Ft.	37.5	27	31
Average Perm. MD.	50	36	42
Average Poros, %	14.9	15.3	16.9
Average Oil Sat. %*	19.2	20.0	9.6
Avg. Total Water, %†	61.8	62.5	71.2

* Based on representative porosity measurements.
† Corrected for 100 B/AF water of crystallization.

The filtrate-loss coring mud has not prevented substantial ingress of water filtrate into the cores. All of the water values are much higher than is believed to be the true condition. In contrast to the former use of the bentonitic coring mud, which resulted in very low chloride contents in the cores, the low-filtrate-loss mud has resulted in the obtainment of chloride values which calculate to reasonable values of connate water by the method described by Barnes and Woods.[2] This might imply that coring with high-filtrate mud results in the partial flushing of both connate water and the oil content of the cores, whereas with the low-filtrate-loss mud no connate water is flushed although possibly some oil content might be lost. The Glenn sand in one well was cored with oil, and the water content value of one section was 12.4 percent as against 17.0 percent by calculation from the chloride determinations.

As to the oil-content data, some other pools in the Mid-Continent area where secondary-recovery investigation and development are being done on sands at depths of 1000 feet and greater, it has been found that the oil-saturation values often are considerably lower than those indicated by deducting past oil production from the effective pore volume. This most logically implies that part of the existing oil content in the sand has been flushed out during the coring procedure. In several comparative cases the partial flushing of the oil content has appeared equally severe in both rotary and cable coring. At the present time it is not known whether severe flushing of the oil content has occurred in the Glenn pool core tests. It is unfortunate that in most cases at Glenn pool the past production records are not complete so that the remaining oil can be determined by deducting past production from effective pore volume. Even if available, accurate reallocation would be difficult to the two or three more or less separate productive zones. However, with further new drilling and further studies, additional core analyses, electrical logs, and drill cuttings should provide a more complete, continuous, pool-wide description or picture of the entire reservoir.

Performance of Repressure Projects

As of April 1, 1943, there are 18 projects in operation. Tabulation of repressure data and production results is given in Table 1. The properties comprise 2000 productive acres and before the new development work had 308 producing oil wells. To date 51 new oil wells and 65 input wells have been drilled. The oil production for March, 1943, was 1983 barrels per day in contrast to a prior average of 714 barrels per day, or an increase of 1269 barrels per day. The current weighted average injection of air-gas is 1.6 MCF per barrel per day of increased oil production.

Before the repressuring the average oil production per well was 2.3 barrels per day while currently the rate is 5.5. Some of the new oil wells that have been completed nearby to input wells that had been in operation a few months have secured initial rates of oil production substantially above the current average rate for the original oil wells. Where such new oil wells have been drilled at inside locations or hitherto undrilled territory in central portions of the leases, the initial rates have been as high as 25 to 40 barrels per day. In some of the repressure projects where several new oil wells of such type were drilled about ⅓ of the increased oil production is obtained from the new oil wells and about ⅔ from the repressure effect on the original oil wells.

A curve of the oil production from the 18 projects since the L. R. Kiefer operation was commenced in May, 1940, is given in Figure 3. Previously the average production for the group had been 747 barrels per day. The average normal rate of decline for the properties had been 4 percent per year. To April 1, 1943, the estimated accumulated increase in oil production has been 580,914 barrels.

It is estimated that approximately 1800 tons of steel was used in the repressure work. The large majority of the tonnage was second-hand lightweight casing and was not suitable for deeper wells. Based on current production an average of 1.42 tons of steel has been used per barrel of additional oil per day.

The former or normal gas production from the 18 projects had been 755 MCF per day, and additional withdrawals of 1434 MCF per day now being made. Total input is 1994 MCF per day. The additional gas withdrawal currently is 72 percent of input. Probably a lesser amount of gas should be withdrawn if it were not necessary to have gas available for injection. Even with this with-

[2] "Distinguishment Between Oil and Water Zones from the Connate Water-Oil Ratios Determined by Core Analysis," K. B. Barnes and R. W. Woods. A.P.I. Prod. Bull. No. 224, Vol. 20 (IV), 1939.

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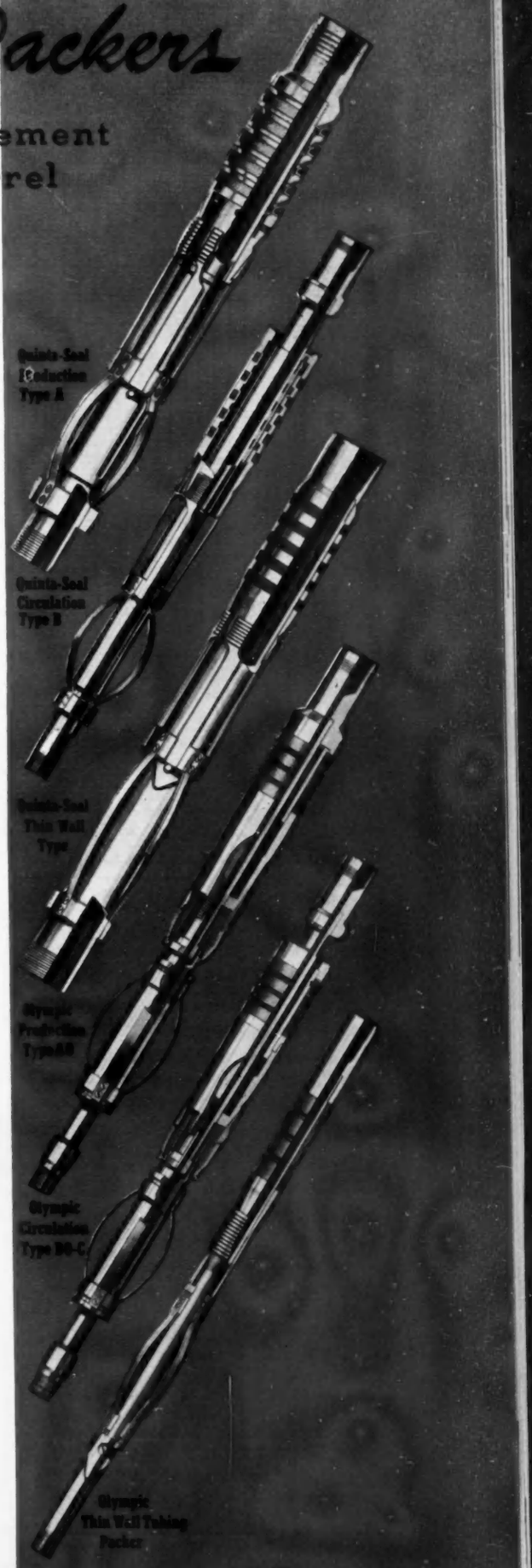
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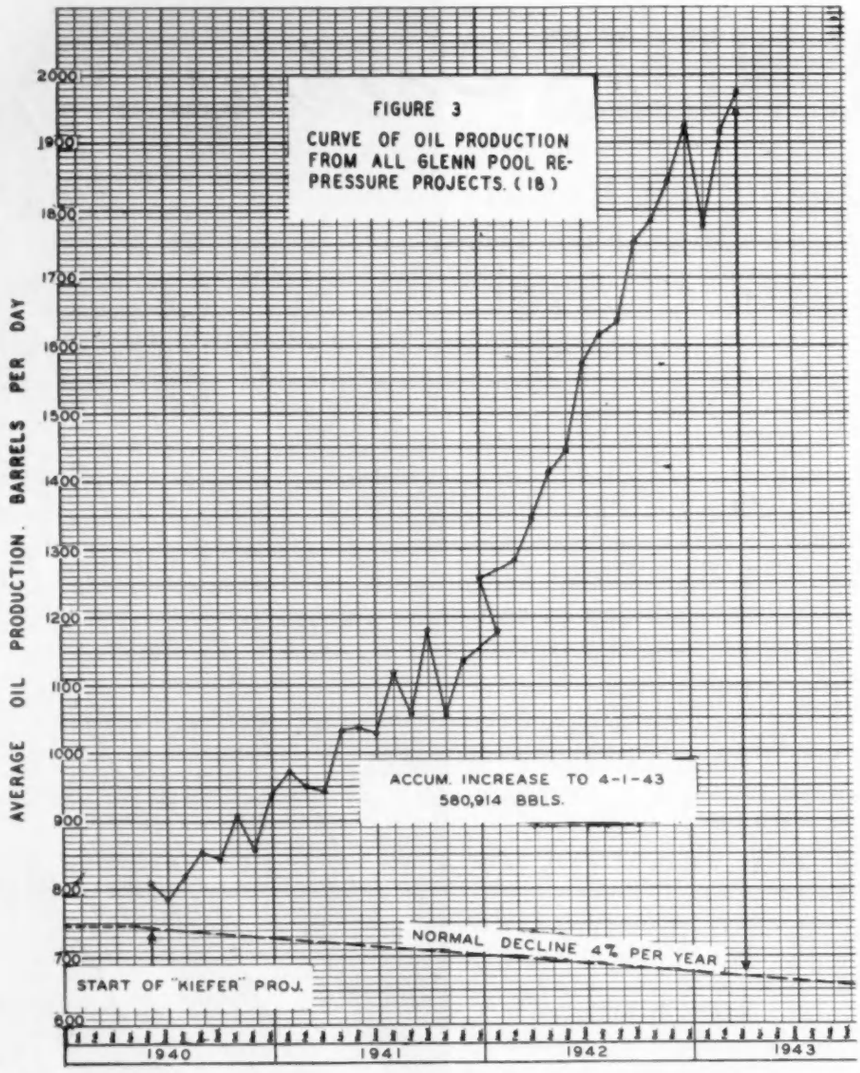

drawal rate, however, wells which formerly had an average of 25 inches of vacuum at the casingheads now have pressures ranging from 15 inches of vacuum to atmospheric.

Increased Recovery

An accurate method of estimating the increased oil recovery that may be obtained at Glenn pool by repressuring has not yet been developed. In some work reliance has been made on comparisons with similar projects elsewhere, accounting for differences in past oil production, sand character, thickness, percent oil and water saturation, and other pertinent factors. The most similar operations in the Mid-Continent probably are the pattern type air-gas drives in the northern portion of the Nowata, Oklahoma, field and some comparisons with these have indicated that repressure yields for the better Glenn pool properties may be between 5,000 and 10,000 barrels per acre.

Other investigators have examined recovery data for a large number of gas-repressuring projects in the Mid-Continent which have had substantial operating history and found that on the average the successful operations will obtain about 25 percent more oil than would have been recovered ultimately without repressuring. On this basis, with the average recovery expectancy at Glenn pool without repressuring on the order of 28,000 barrels per acre, the repressuring might effect an additional yield of about 7,000 barrels per acre.

Neither of the foregoing methods of recovery estimation are precise in character and depend specifically upon the exact sand conditions and the existing oil and water saturation values under a particular lease, and are in the sense of broad experience factors. Possibly the best method that might be used should be based on the average percentage of oil and water saturation existing under a given lease. The recovery expectancy of the repressuring should be the difference between the existing percent oil and water saturation at the start of the work and a lower percent oil and water saturation that would be obtained when the produced gas-oil ratio reached a limiting economic point. Such a method, however, requires reliable relative permeability-saturation curves for the sand and oil and water saturation core data which are representative of conditions in place in the formation.

Following the conception that recoveries by gas repressuring eventually will be confined to the point where an uneconomic produced gas-oil ratio is obtained, it is believed that the present gas-oil ratios of the projects as given in Table 2 are of interest. With only five exceptions the projects at the present time have produced gas-oil ratios less than 1500. The current weighed-average ratio is 1450, while the average before repressuring was 1225. As a matter of fact, it will be noted that the present produced gas-oil ratio of many of the projects is considerably lower than before repressuring started. Interesting speculations might be made as to the physical aspects of this circumstance. Detailed data for two projects for gas injection, oil and gas production, and the injected and produced gas-oil ratios are given in the table.

While only a short period of operating life has elapsed, apparently the increase in produced gas-oil ratio will be slow and a long period of operation, probably on the order of 10 to 20 years, should be in prospect for most of the projects before the produced gas-oil ratio reaches uneconomic proportions.

TABLE 2

Year and Month	160 Acre Project—Started 10-31-41					160 Acre Project—Started 10-13-41				
	Oil B/D	Gas, MCF/24		Gas/Oil Ratio		Oil B/D	Gas, MCF/24		Gas/Oil Ratio	
		Injec.	Prod.	Injec.	Prod.		Injec.	Prod.	Injec.	Prod.
Average Before Repressiring										
.....	99	....	60	....	606	102	....	70	....	686
1942										
January.....	162	90	93	554	574	122	6	68	49	657
February.....	174	148	111	850	637	128	6	74	47	578
March.....	203	204	127	1005	626	127	19	78	150	614
April.....	244	224	152	918	623	126	18	81	143	642
May.....	304	222	169	730	556	121	62	87	512	719
June.....	344	240	175	698	508	127	128	98	1007	771
July.....	367	250	175	681	476	163	183	100	1122	613
August.....	390	248	200	636	513	197	205	124	1040	629
September.....	413	283	199	686	482	250	247	150	988	600
October.....	398	304	199	764	500	270	249	158	921	583
November.....	382	307	191	803	500	306	238	167	778	546
December.....	384	272	194	708	505	322	236	179	733	556
1943										
January.....	334	275	195	822	584	319	210	170	659	533
February.....	347	312	178	898	513	323	236	170	730	526
March.....	361	297	183	823	507	337	213	185	632	548

IMPERMEX

OVERCOMES SALT WATER DRILLING TROUBLES

The use of IMPERMEX, a colloidal material for drilling with either salt or fresh water muds, has enabled operators to drill through salt overhangs without encountering drilling difficulties and without having to run a protective casing string. The unusually low water loss characteristics and the exceptionally thin filter cakes resulting from the use of IMPERMEX allow unhampered drilling and the free running of electrical logs in holes contaminated by salt zones ordinarily difficult enough to force the abandonment of drilling. More accurate formation information is disclosed through core analysis when IMPERMEX is used.

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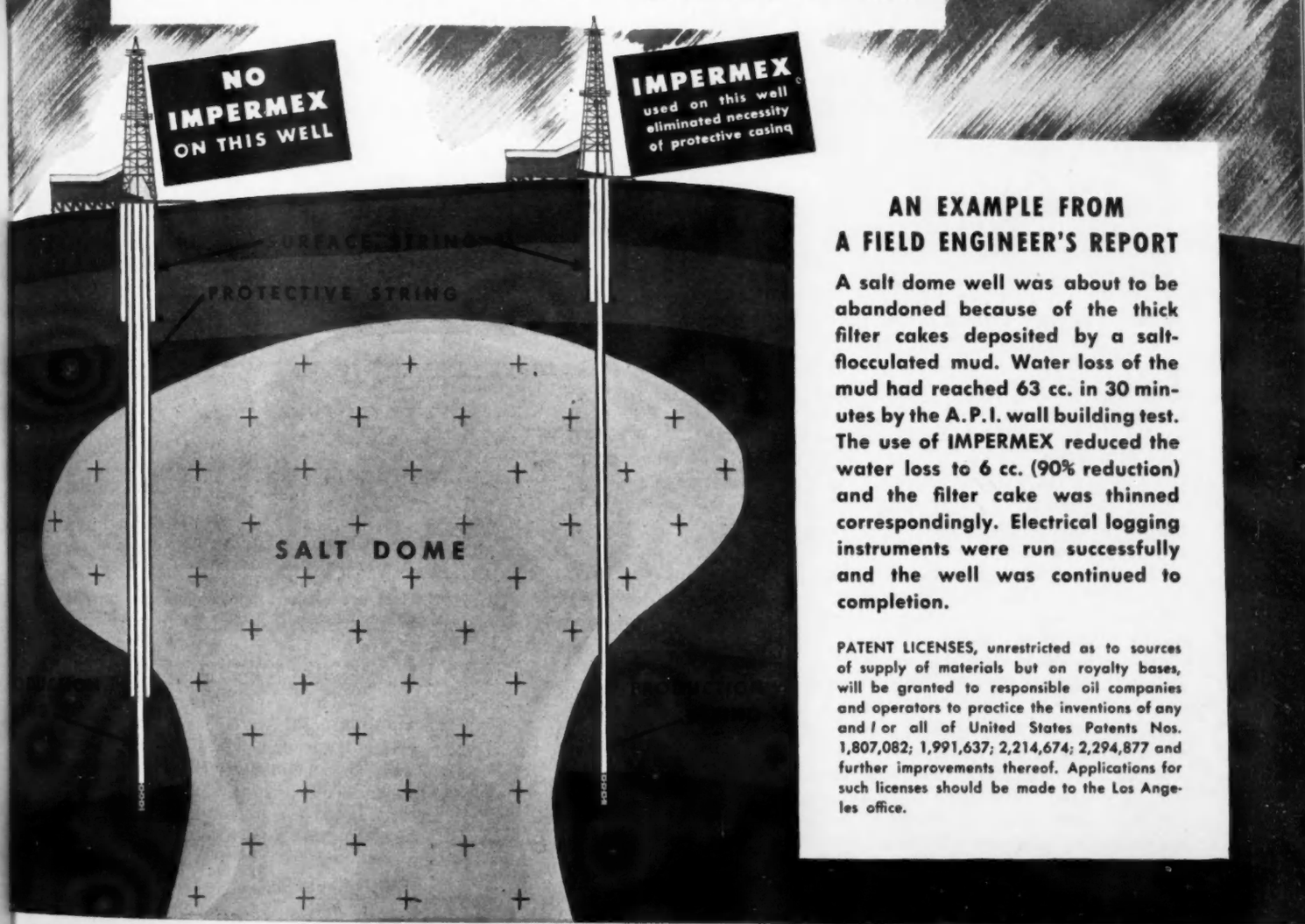
NO IMPERMEX ON THIS WELL
IMPERMEX used on this well eliminated necessity of protective casing
SURFACE STRING
PROTECTIVE STRING
SALT DOME

AN EXAMPLE FROM A FIELD ENGINEER'S REPORT

A salt dome well was about to be abandoned because of the thick filter cakes deposited by a salt-flocculated mud. Water loss of the mud had reached 63 cc. in 30 minutes by the A.P.I. wall building test. The use of IMPERMEX reduced the water loss to 6 cc. (90% reduction) and the filter cake was thinned correspondingly. Electrical logging instruments were run successfully and the well was continued to completion.

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PRACTICAL OPERATING *Hints* FOR THE PRODUCTION MAN

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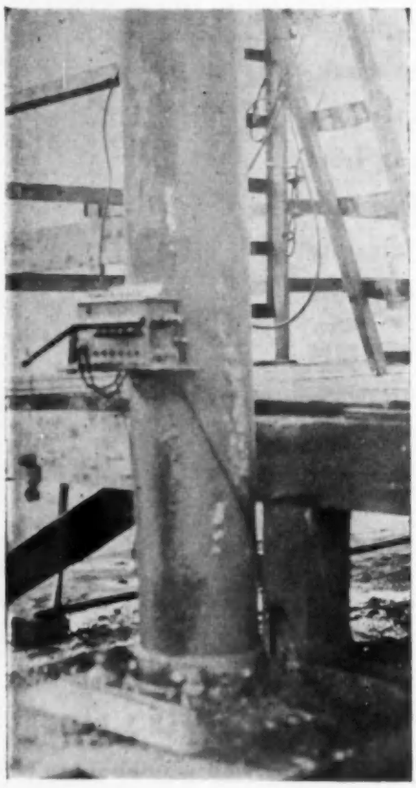
1. LUBRICATION

Pressure Feed Saves Switcher's Rounds



Mechanical lubricator, actuated by pump beam, insures oil to all bearings during working cycle.

LUBRICATING the pitman stirrup bearing and the bearing of the walking beam requires that the pumper ascend a ladder or stairway to these points. To eliminate this climbing, discarded or outmoded gas engine mechanical lubricators are being resurrected and converted to units for supplying oil to vital points.

The lubricator is attached to the sampson post, bolted to brackets and actuated by rods attached to a convenient point on the walking beam and connected to the lever of the lubricator. Tubing is led from the individual pumps of the lubricator to the places requiring lubrication so that oiling is positive ing lubrication so that oiling is positive.

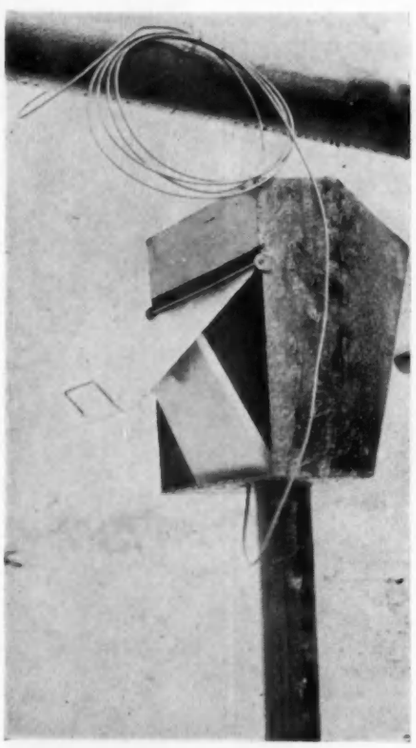
Where the tubing may be exposed to bending stresses at the points of flexure, flexible connections are attached, similar to the flexible hose connections on hydraulic brakes of an automobile, or the flexible gasoline connection near the fuel pump.

2. RECORDERS

Instrument Housing Guards Chart Stock

WHEN recording instruments are placed out-of-doors and located some distance from the lease office, a space for storing blank charts and bottles of ink can be included when the design is laid out. Instead of making the cover barely wide enough to contain the instrument, the depth can be increased to provide excess space behind the instrument to be used for conveniently placing spare charts and bottles of ink.

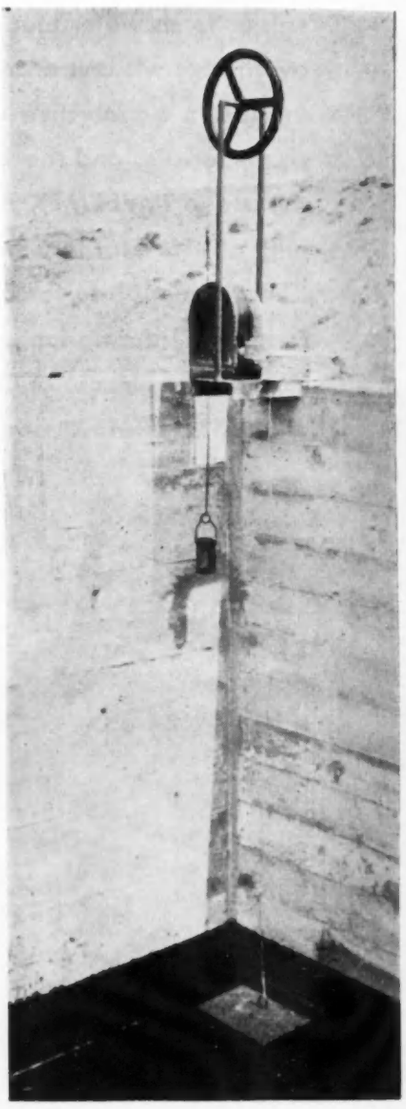
The door at the back has a hinge consisting of a rod running the full width and rotating in brackets welded to each side of the case. The top of the door section extends upward and inside the covering of the instrument so that, when closed, the joint at this point is sealed against rain.



Hinged back of instrument case affords storage space. View shows lid held open by chart box.

3. SALT-WATER DISPOSAL

Float Switch Holds Desired Pit Level



Float and counterweight actuate line carrying adjustable stops to engage eye in switch lever.

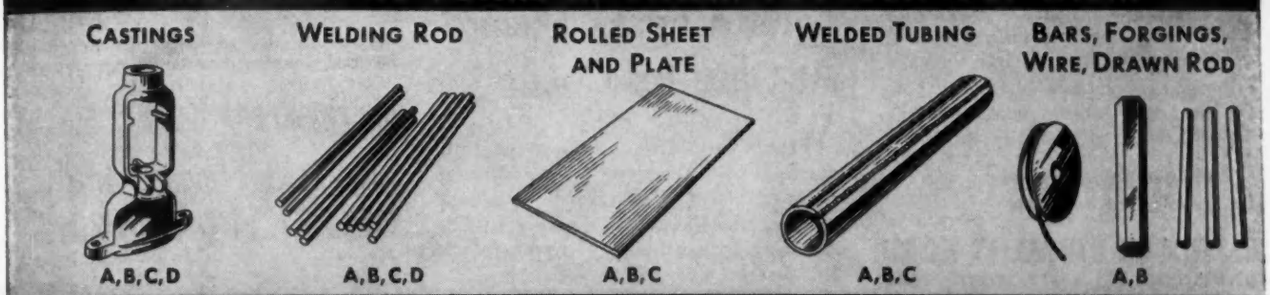
CONTROLLING the level of water in a concrete tank included in a salt-water disposal system is accomplished by a home-made float which controls the action of the motor-driven pump through a switch. The float is a rectangular steel box built to float on water with a flexible metallic cable attached to a ring in its

Do You Know These Facts About HASTELLOY ALLOYS...

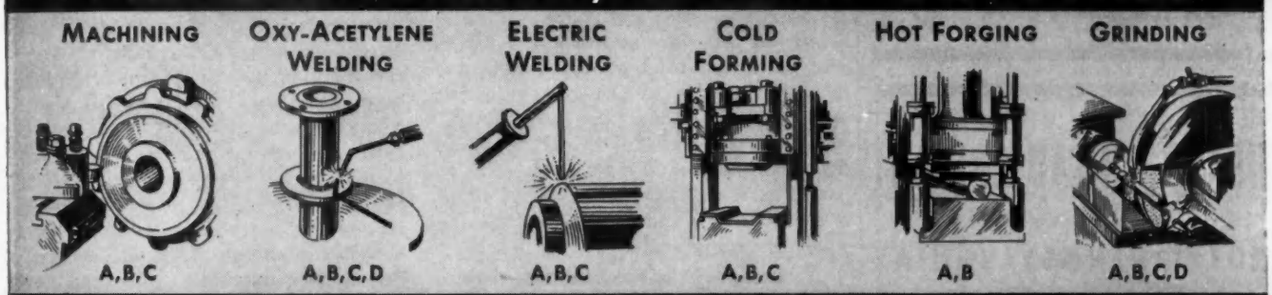
For Resistance To Severely Corrosive Media?

For resistance to severely corrosive media, use one of the four Hastelloy nickel-base alloys — A, B, C, or D. Many types of chemical equipment—such as valves, pumps, pipe and fittings, autoclave liners, heating or cooling coils, agitators, and acid concentrator tubes — are being fabricated from these high-strength alloys. Outlined here are some of their properties.

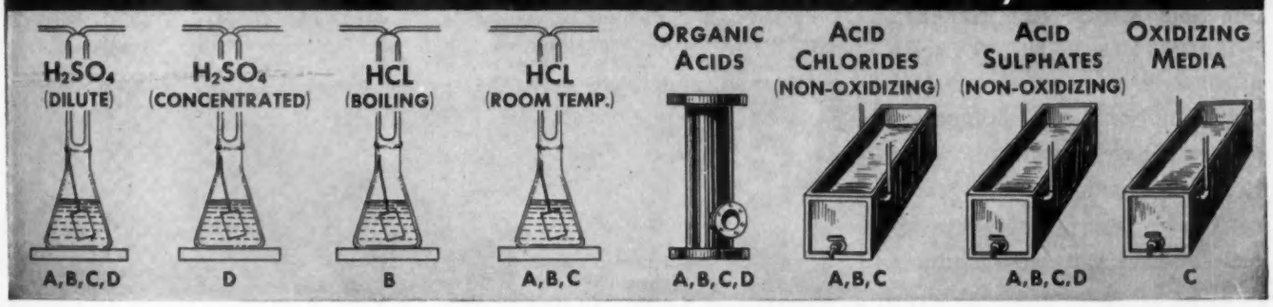
These are the Forms in Which You Can Get Them



These are Some of the Ways in Which You Can Work Them



These are Some of the Corrosive Media They Resist



For Complete Information on penetration tests, available forms, and methods of fabrication of Hastelloy alloys, send for the booklet, "Hastelloy High-Strength Alloys." Test samples of these nickel-base alloys are also available.

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top. This cable extends upwards over a sheave, which in this instance is a telegraph wheel from an old string of cable tools, thence downward through the cover of the electric switch.

Knots in the cable are spaced to open and close the switch through a narrow range to maintain an almost constant level of water in the vat. A small poise, or weight, on the free end of the cable keeps it tightly stretched so that, when the float rises, the weighted free end will close the switch, while the weight of the float as it slowly falls as water is being removed is sufficient to open the switch when the knot strikes the lever.

4. SAFETY

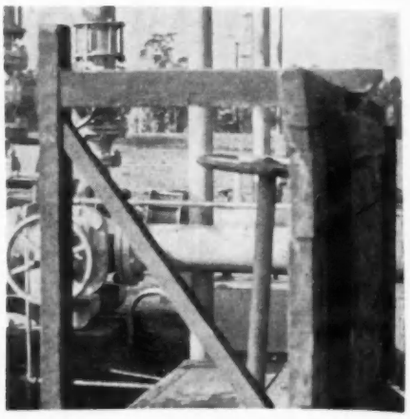
Latch Checks Hazard At Gate Pit Cover

WHEN space limitations prevent the opening of a gate pit cover through angle sufficient to prevent its accidental closing, the unit may be safely held in the clear by erecting a short post, suitably braced, adjacent to the gate pit, on the side toward which the covers swing to open.

Hinged to this upright is a section of 2x4-inch, set edgewise, with a notch in the outer end to drop down over and engage the edge of the gate pit cover when opened.

Beveling the end of the latch makes its action automatic if it be so set as to stand at the proper height to be lifted just enough to engage the latch as the cover is swung against it.

A latch such as the one described is much safer than the use of a prop from within the gate pit, and is unaffected by wind or weather, the only precaution being to see that the engaging edge be parallel with the edge of the opened cover, and that the interlocking surfaces be clean of oil or grease.



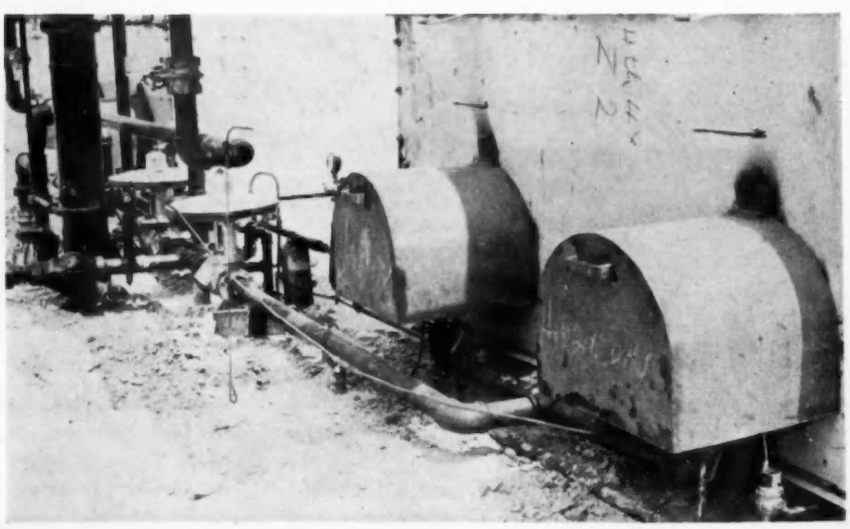
Hinged and notched timber fits over edge of pit cover, insuring retention in opened position.

5. TREATERS

Hinged Hoods Halt Burner Fluctuations

COVERS for the burners in an oil heating furnace may be made and attached to the front of the structure with little outlay of money and material. The covers on one such installation are in the shape of half of a cylinder with the outer end closed with a steel flat.

They are large enough to cover the entire burner opening and the controls which are necessary for operation. The end without a cover is placed against the face of the heater and attached thereto with a butt hinge. A handle welded to the upper part of the front end cover serves two purposes. The operator may use it when lifting to inspect the fires, and to slide it over a catch above the opening when repairs are necessary.



These light metal covers, hinged to furnace front, prevent excessive air in fuel mixture and effectively divert tramp currents eddying along flat front of treater shell.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

THE East Coast supply crisis was the major problem of the week in Washington, easily eclipsing all other developments.

Seen by PAW officials as justifying their predictions that failure of OPA to deal realistically with the oil problem would lead to trouble, the gasoline shortage, and concomitant ban on non-essential driving and bone-reaching cuts in bus and truck service, is expected to remain serious for weeks to come.

Every effort was being made to keep transportation facilities open for war workers and to get gasoline to tractor-using farmers whose planting operations have been held up, but week-end arrivals of motor fuel were not on a scale which gave satisfactory assurance that filling stations could reopen.

PAW concerned itself almost exclusively with development of methods of meeting its latest problem, but found time to issue definite spacing rules for the Dorcheat-Macedonia field in Arkansas and to announce the perfection of plans for the establishment of emergency stores of field tubular goods at 14 points throughout the oil country on which the smaller independent wildcatters could draw.

PAW Will Establish Stockpile of Tubular Goods for Wildcats Of Small Operators

»

Floods Threaten Industrial East With Severe Fuel Shortage

»

PAW Not Likely To Be Disturbed By Roosevelt's New Top Agency

»

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

The supreme court, passing on Texas' "Rule 37" cases, reaffirmed a hands-off policy with respect to state laws, taking the position it should interfere only when real constitutional questions were involved, leaving to the state courts the deermination of the "reasonableness" of railroad commission orders.

PAW Plans 30,000-Ton Stock of Pipe for Wildcat Emergencies at 14 Depots

Approximately 30,000 tons of oil-country tubular goods will be cached at mills and field depots within the next six weeks or two months, to be drawn upon in case of emergency by the smaller wildcat operators under plans which have been perfected by PAW to set up stockpiles at 14 depots.

Location of the depots has not been announced, but will be made known sometime before they are established. PAW officials hope to have them ready for operation sometime in July.

Developed for the benefit of operators who drill less than 40,000 feet a year and who cannot project their future needs far in advance, the plan calls for the reservation of approximately 20,000 tons of tubular goods at steel mills and another 10,000 tons in the depots.

These stocks, it was emphasized, will be for emergency use only, and no orders will be filled from them unless the operator's request is approved by the PAW district production director in the district in which the material is to be used. All materials from the emergency supply are to be acquired under the terms of Preference Rating Order P-98-b.

The initial stocks reserved are to be produced from PAW's allotment of carbon steel for the quarter beginning July 1, and will be currently maintained thereafter.

The location of each depot and the volume of stock will be determined on the basis of wildcat development of the area in the past two years, anticipated activity during the remainder of 1943, transportation problems, distances from potential fields, and the number of small operators in the area to be served.

Announcing the plan May 25, Ickes expressed the hope that it will meet the need for minimum stocks of materials to be immediately available when required for wildcat and emergency purposes. Wildcat operations, he pointed out, have not reached the rate necessary if a minimum of 4500 wells is to be drilled this year, and it is hoped that by assuring material the small operator will be encouraged to expand his activities.

Davies, however, took advantage of the occasion to warn that the establishment of the emergency depots is not to be interpreted as meaning that materials are becoming more abundant.

On the contrary, he said, "materials have been, and still are, becoming increasingly scarce. The emergency-materials depot is a plan whereby a wildcat operator can proceed with his important operations, assured that emergency materials will be available should he strike oil.

"As an example of the importance of the depot plan in encouraging wildcat operations," Davies said, "it might be pointed out that in one instance, several years ago, some 70 strings of pipe were held in reserve for an equal number of wildcat operations that eventually brought in five producing wells. Today, it is no longer permitted, and certainly it is undesriable, to have 70 strings of pipe lying idle.

"From the wildcatter's point of view, he could not engage in his operations unless this pipe were available, ready on a moment's notice, should production be obtained. The emergency depot plan now makes it possible for a wildcatter to proceed with his exploratory operations without having extra strings of pipe actually in his possession. Should he complete a well, the necessary string of pipe can be forwarded from the nearest emergency depot within a maximum of 24 hours. The depot can operate with only a few strings to meet such emergencies.

"Thus we will solve two problems at the time: Few strings of pipe will be required in stock; and the wildcatters can go ahead with operations, knowing that pipe is available at once if required for actual use."

Flood Disruption of Transportation Brings Greatest Fuel Shortage to East

Government officials and oil men last week worked shoulder to shoulder in frantic effort to maintain tenuous and seriously threatened gasoline suppply lines to the north East Coast, in what may well be termed the greatest non-shooting battle of the war.

Billions of dollars in war contracts and food and other supplies for millions of people hung in the balance, and upon the ability of the government and the industry to keep gasoline supplies moving depended the success of plans for military operations in the immediate future.

As mud-spattered pipe line crews worked round the clock to build a line by-passing the break in the big inch—and got oil running through it three days before what PAW experts believed was the earliest possible time, OPA and ODT ruthlessly slashed civilian consumption and PAW sought to develop new avenues of transportation.

PAW undertook serious consideration of the possibility of a 10 percent alcohol

and 90 percent gasoline mixture as a motor fuel, hoping to pry loose government-held alcohol if it proved practicable; and seized 16,000 barrels a day of the gasoline flowing through the Plantation Pipe Line to Greensboro, North Carolina, to be hauled by tank car to Richmond, Virginia, and shipped by barge from that point to Washington and Baltimore, the two hardest-hit cities in the famine area.

OPA's ban on non-essential driving had little effect, since most filling stations along the coast from Virginia to Maine were displaying "no gas" signs and had no fuel for essential drivers. Nevertheless, thousands of cars were found by OPA inspectors, parked in front of places of amusement, their owners burning up what little gas they might have in their tanks.

ODT ordered a 40 percent cut in gasoline consumption by all carriers and followed up with restrictions and prohibitions upon wholesale and retail deliveries, but even with the curtailment of service bus lines had no assurance of supplies and buses ran out of gasoline on the road and in city streets. As a result of the restrictions, some areas which normally had 15-minute service were reduced to one bus an hour, but in most instances the transportation lines succeeded in maintaining their usual rush-hour service but with shortened runs.

The break in the big-inch and the washing out of single-track railroads along the turbulent rivers of the Mississippi Valley necessitated long roundabout routes for oil moving to the East, for a few days cutting deliveries nearly 50 percent and jamming the few gateways to the area which still remained open. ODT officials figured that even after the pipe line resumed operations, deliveries would be cut by some 125,000 barrels daliy during the weeks required for repair of roadbeds and bridges. A further possibility was serious interference with the barge movement by floods in the Mississippi River itself.

Tank car deliveries into District 1 fell off rapidly after the big-inch broke, and for the week ended May 22 dropped to an average of 884,768 barrels daily from 980,326 barrels in the preceding week, PAW reported.

To aid in making up the deficiency it was necessary to withdraw 49,857 barrels daily from storage, and East Coast stocks of all oils, which had increased in the preceding week, dropped back to 26.8 percent of normal.

In addition to the tank-car movement, an average of 11,839 barrels daily of kerosine moved in drums in box cars. Tank-car shipments to New England points dropped 19,726 barrels daily under the previous week, to an average of 173,125 barrels.

Last week, however, tank-car movement fell off even more seriously and a one-day survey by ODT showed the arrival at 25 Eastern terminals, accounting for approximately 90 percent of the total rail movement, of only 637,700 barrels—a drop of 24 percent below the average for the preceding week—with every likelihood that deliveries would continue to fall for several days before turning to the upgrade.

"The fact that a further decline in tank-car shipments may be expected during the present week," Davies said in commenting on the figures, "should bring pointedly home to everyone the fact that we are face to face with the most critical situation—a situation that we warned repeatedly would inevitably occur if, with our cushion of storage stocks already below the level considered adequate to safeguard essential civilian needs, consumption were to continue at the recent rate.

"The floods causing pipe-line breaks and an interruption of rail shipments only serve to hasten a crisis which was bound to occur anyhow, in view of a continued use of motor gasoline at a rate in excess of that certified by this office as the supply available for civilian use."

Davies, by indirection, laid the blame for the situation on OPA's lifting of the former ban on pleasure driving and overly generous distribution of gasoline rations, and asserted bluntly that "the only way in which we can possibly hope to avoid the genuinely serious consequence of a complete exhaustion of stocks is to strike a balance between receipts and deliveries of petroleum products.

"Unless and until that is done, I can see nothing but trying times ahead," he said. "That is the carefully considered judgment of the agency of government charged by the President of the United States with the responsibility of assuring a never-failing supply of petroleum for our armed forces and of meeting the essential requirements of war industries and the civilian economy at home."

Looking to future months in which supplies would continue low, Ickes proposed the large-scale adoption of colloidal fuel by industries which could switch from oil to an oil-coal mixture, seeing in it the possibility of a saving of 15,000,000 barrels of residual fuel oil a year in Districts 1 and 2.

He pointed out that the Bureau of Mines recently conducted extensive investigations into the possibility of colloidal fuel and had suggested potential locations for 20 plants with an annual capacity of 600,000 barrels each.

Simplified Resume of Amended P-98-b

Order P-98-b, as amended May 15, 1943, provides the procedure for obtaining maintenance, repair and operating (MRO) supplies, and also capital equipment. Following is a condensed, simplified brief of the control features provided in the order:

All delivery orders issued under P-98-b must be accompanied by the same familiar certification required heretofore.

The rating "AA-1" and allotment symbol "MRO P-98-b" shall be placed on all purchase orders for MRO materials. The rating "AA-2X P-98-b" and, when necessary, the allotment number assigned on Form PD-873 for production operations, shall be shown on all capital asset material purchase orders. For acquisition of capital asset material other than production operations, operators should follow the procedure outlined in Schedule E of P-98-b.

If operator has not filed a PD-873 Form and received allotment number and preference rating for a proposed program, he may accompany his first purchase order for capital asset material required in any quarter, with such form, in quadruplicate, to District Office of PAW in area in which material will be used. If approved, his program will receive allotment number and preference rating on Form PD-873, and his delivery orders will be approved.

Following is a brief resume of control now provided by the order.

Section I

(a) If the delivery order total value is less than $100.00, no control or approval is necessary. This applies to both MRO or capital expenditures.

(b) If the delivery order total value is $100.00 or more, but less than $1,000.00, and the item value is less than $500.00 each, operator sends a copy of the delivery order to the appropriate District Office of the PAW for information purposes. (Post audit and reporting.)

(c) If delivery order total value is $1,000.00 or more and the item value is less than $500.00 each, countersignature by the District Director of Materials is necessary, and operator shall submit delivery orders in duplicate for approval.

(d) If the item value on a delivery order is $500.00 each or more, approval by the Washington Office of the PAW is necessary for all branches of the Petroleum Industry EXCEPT Production. Delivery orders covering production material shall be submitted in duplicate for approval to the District Director of Materials of the District in which the material will be used.

MRO Exceptions

The foregoing provisions of Section I apply except in the following MRO instances:

(a) Delivery orders covering certain specified MRO material listed below require submission of properly certified delivery orders to the District Office of the PAW for information only, and DO NOT require PAW countersignature, viz:

1. Aluminum allocated pursuant to application made to the Aluminum and Magnesium Division of the War Production Board.
2. Rotary bits.

(b) Delivery orders covering certain other specified MRO material, listed below, require approved by the PAW if total cost is over $100.00:

(i) Cast Iron Valves over 12 inches.
(ii) Industrial Control Instruments, including Relief and Control Valves and Regulators.
(iii) Steel Valves.

The above mentioned MRO material (b) (i) (ii) (iii) requires approval by the appropriate District Office of PAW where the material is to be used in Production, or when the cost of every item is less than $500.00 and the material is to be used in any other branch of the industry, or (b) requires approval by the Washington Office of the PAW when the cost of any item on the delivery order is $500.00 or more and the material is to be used in any other Branch of the Industry except Production.

Each MRO delivery order submitted to PAW shall provide following information: Specific use of material, Branch of Petroleum Industry, District in which material will be used, price, description of material, weight of controlled material, and such additional information as may be necessary for PAW to make accurate determination of operator's needs.

Military Needs Compete With Civilians for East's Oil

In an effort to arouse the public to the seriousness of the oil situation, the Office of War Information made public May 28 a few figures, sketchy but sufficient to indicate the tremendous amount of oil which is needed in the theatres of war.

General Jimmy Doolittle's "gang" of aviators, in 15 days flying in Tunisia, burned up 16,500,000 gallons of high octane gasoline, OWI said. Three hundred Liberators leaving a British base to bomb Berlin will need more than 525,000 gallons before they get back, or slightly more than a day's ration for all of Baltimore.

All the auto tanks in the northeastern area now short of gasoline, it was declared, couldn't hold enough fuel to insure a day's operation in all theatres of war.

OWI pointed out that the shortage is due to the competition of military and civilian needs for the limited transportation facilities available, and the former, it said, must be satisfied at all costs.

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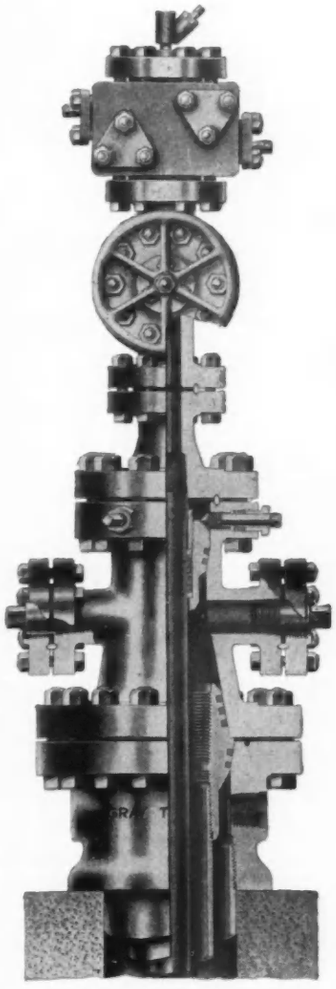

Gray Well Head Assembly, showing Tubing Head side outlet valves removed, and the Gray Composite Manifold installed in place of a conventional Christmas Tree.

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New Top Government Agency Is Not Expected to Interfere With PAW

A new "top" agency, the Office of War Mobilization, was set up by President Roosevelt May 28, with James F. Byrnes as its head and with directions to keep the military machine and essential civilian economy running a high speed.

Byrnes, who left Congress to go on the Supreme Court and left the court to become director of Economic Stabilization, abandoned the last post to take over his new duties, with Justice Fred M. Vinson of the District of Columbia Federal Court of Appeals succeeding him.

The new agency, the President said, implemented by a War Mobilization Committee, will "unify more closely the work of the war agencies concerned with production, procurement, transportation and distribution of military and civilian supplies, materials and products."

The War Mobilization Committee will be headed by Byrnes and will consist of the Secretaries of War and Navy, Chairman Harry Hopkins of the Munitions Assignment Board, WPB Director Donald M. Nelson and the new Director of Economic Stabilization. Heads of the various departments and agencies will be asked to sit with the committee whenever matters of special concern to their organizations are under consideration.

OWM is not expected to intefere with the activities of PAW, OPA or other agencies, but will act as mediator of controversies which may arise from time to time, as in the past they have arisen between PAW and OPA, PAW and the rubber director, etc.

In setting up the agency, the President stole a march on Congress, which has before it a bill sponsored by Senator Harley M. Kilgore of West Virginia to establish an Office of Scientific and Technical Mobilization.

Specifically, the President directed the OWM:

1. To develop unified programs and to establish effective policies for the maximum use of the nation's natural and industrial resources for military and civilian needs. For the effective use of the national manpower not in the armed forces, for the maintenance and stabilization of the civilian economy and for the adjustment of such economy to war needs and conditions.

2. To unify the activities of federal agencies and departments engaged in or concerned with production, procurement, distribution or transportation of military or civilian supplies, materials and products and to resolve and determine controversies between agencies except certain issues left to the director of economic stabilization.

3. To issue directives on policy or operations needed by the federal agencies to carry out programs developed.

"We are entering a phase of the war effort when we must streamline our activities, avoid duplication and overlapping, eliminate interdepartmental friction, make decisions with dispatch and keep both our military machine and our essential civilian economy running in team and at high speed," Roosevelt said in announcing the new set-up.

Congress May Dismember OPA; Give Price to PAW

A congressional fight to dismember OPA and distribute its functions among other agencies is waging, precipitated by recent internal dissension within the agency which has resulted in the resignation of a number of officials of the food division, contests for power and the messed-up gasoline situation.

Administrator Brown, reported from day to day as resigning or on his way out, has declared he will "not desert the President" and will clear up the controversy over authority, but is believed by many to be faced with an impossible job and a poor law in seeking to control inflation.

One of the several separate targets of attack is the handling of the oil situation, which has been bitterly criticized on both sides of the capitol, particularly by New England delegations. Some of the members from the oil states also are gunning for OPA because of its refusal to grant an over-all increase in crude prices.

This week, Representative Wright Patman of Texas will seek to impose a rider on current legislation transferring authority over all government functions relating to production, distribution or price of gasoline and petroleum products to PAW.

It is not believed likely that Patman's move will succeed, but there are definite indications that a thorough house cleaning of OPA is in the offing, which may result in important changes among officials having to do with oil questions.

PAW Makes Special Rules for Arkansas Field

Specific rules for development of another field were laid down by PAW May 24 in Supplement No. 9 to PAO No. 11, covering the Dorcheat-Macedonia, Arkansas, oil and gas field.

Lifting the previous requirement that an exception must be secured for each well proposed, the supplement provides that materials may be used and wells drilled without individual authorization, provided they conform to the following conditions:

1. All wells must be drilled on at least an 80-acre drilling unit located entirely in either the north or south half of a regular quarter section, and the well must be located within 150 feet of the center of the drilling unit.

2. Where the Smackover lime is productive, wells must be drilled to and produced from the Smackover, but if the operator desires he may dual complete so as to produce also from the Cotton Valley formation. In lieu of the foregoing, the operator is given the option of consolidating a quarter section of 160 acres upon which may be drilled or recompleted two wells, provided that such wells are located in the approximate centers of the north or south 80-acre halves and one of the wells is drilled to and completed or recompleted in the Smackover lime.

3. Where the Smackover lime is not productive, wells must be drilled to and produced from an oil sand in the Cotton Valley formation, but may be dual completed, if the operator desires, in two pays within the Cotton Valley formation to produce both oil and gas.

4. Dual recompletions are provided for, subject to the following requirements:

(a) Wells now producing only from the Smackover lime may be dual-recompleted to produce either oil or gas from the Cotton Valley formation in addition to the production from the Smackover lime.

(b) Wells drilled to the Cotton Valley formation, where the Smackover lime is not productive, may be dual-recompleted to produce both oil and gas from separate sands within the Cotton Valley formation.

5. All dual completions and dual recompletions must be made so that the production from the separate formations or sands is not comingled in the well.

These requirements, PAW said, represent the views of the Arkansas Oil and Gas Commission, which had carried on hearings and studies relating to the further development of the field.

Gulf and Pure Take Over Trans-Florida Line

Dissatisfied with performance of the Trans-Florida pipe line, Defense Supplies Corporation has cancelled its contract with Trans-Florida Pipe Line Company and entered into a new agreement, with the approval of Ickes and Nelson, with Southeastern Pipe Line Company.

Southeastern, owned by Gulf Refining and Pure Oil, will form a new corporation to be known as the Florida Emergency Pipe Line Company, to operate the line for Defense Supplies Corporation, which in turn leases it from Defense Plant Corporation. All the stock in Florida Emergency will be controlled or owned by Southeastern.

The two defense corporations are known to have been dissatisfied with the Trans-Florida situation for some time, difficulties having arisen in both the construction and operation of the line.

Hugoton-Kansas City Gas Line Given WPB Nod

Construction of a 26-inch pipe line to carry natural gas to the Kansas City and Springfield, Missouri, area from Texas County, Oklahoma, has been approved by WPB to insure an adequate supply of fuel to war plants and to offset the decline in output in fields upon which the area has depended in the past.

The line, to be built by Cities Service Company, will be the largest of three natural gas lines approved by the Office of War Utilities this year. It will require some 55,000 tons of steel, and will deliver up to 140 million cubic feet of gas daily from the Hugoton field.

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Supreme Court Passes "Reasonableness" Of Texas Oil Rules Back to State Courts

The Supreme Court on May 24 enunciated a policy of non-intervention in controversies over the Texas oil-conservation law and orders thereunder of the Texas Railroad Commission which do not involve constitutional questions.

In line with that position, it reversed decisions of the Fifth Circuit Court of Appeals in which Sun Oil Company and Selby Oil & Gas Company contested commission orders permitting exceptions from the spacing rule.

By a five-to-four division, the court held that the Texas law provides adequate relief from inequities through proceedings in the state courts and took the position that the federal tribunals should not inject themselves into controversies over the "reasonableness" of commission orders.

Delivering the majority opinion, Associate Justice Black pointed out that "with full knowledge of the importance of the decisions of the railroad commission both to the state and to the oil operators, the Texas legislature has established a system of thorough judicial review by its own state courts" and the "Texas courts are working partners with the railroad commission in the business of creating a regulatory system for the oil industry."

Justice Black explained that the Texas procedure is designed to avoid confusion but, he said, "the very 'confusion' which the Texas legislature and supreme court feared might result from review by many state courts of the railroad commission's orders has resulted from the exercise of federal equity jurisdiction."

"As a practical matter," he said, "the federal courts can make small contribution to the well organized system of regulation and review which the Texas statutes provide. Texas courts can give fully as great relief, including temporary restraining orders, as the federal courts. Delay, misunderstanding of local law, and needless federal conflict with the state policy, are the inevitable product of this double system of review."

The most striking example of this misunderstanding, Justice Black continued, was in the McMillan and Danciger cases, where the federal court and the court of civil appeals disagreed, and before the matter could be reviewed the legislature amended the law so that the cases became moot; later the legislature changed the law back to its original state, "as clear an example of waste motion as can be imagined."

"These federal-court decisions on state law have created a constant task for the Texas governor, the Texas legislature and the railroad commission," he commented.

In the cases before the court, the opinion held, a number of problems "of no general significance," on which a federal court can only try to ascertain state law, are raised.

"For example, we are asked to determine whether a previous Travis County district court decision makes this case res adjudicata and whether another case pending in Travis County deprived the commission of jurisdiction," it was pointed out.

"These questions of regulation of the industry by the state administrative agency, whether involving gas or oil prorationing programs or Rule 37 cases, so clearly involve basic problems of Texas policy that equitable discretion should be exercised to give the Texas courts the first opportunity to consider them.

"The state provides a unified method for the formation of policy and determination of cases by the commission and by the state courts. The judicial review of the commission's decisions in the state courts is expeditious and adequate. Conflicts in the interpretation of state law, dangerous to the success of state policies, are almost certain to result from the intervention of the lower federal courts. On the other hand, if the state procedure is followed from the commission to the state supreme court, ultimate review of the federal questions is fully preserved here. Under such circumstances, a sound respect for the independence of state action requires the federal equity court to stay its hand."

Under the opinion, the decision of the circuit court was reversed and the judgment of the district court affirmed in dismissing the complaints brought by Sun Oil Company to set aside an order permitting G. E. Burford to drill four wells on a 2.33-acre tract, and by the Selby Oil & Gas Company similarly to restrain drilling by O. L. Hastings.

In a dissenting opinion, in which Chief Justice Stone and Associate Justices Roberts and Reed concurred, Associate Justice Frankfurter held that access to a federal court should not be denied where there is a diversity of citizenship between the parties.

Jurisdiction over such cases, he pointed out, was vested in the federal courts because of the possibility that "consciously or otherwise, the courts of a state may favor their own citizens."

"Bias against outsiders may become imbedded in a judgment of a state court and yet not be sufficiently apparent to be made the basis of a federal claim," he warned. "To avoid possible discriminations of this sort, so the theory goes, a citizen of a state other than that in which he is suing or being sued ought to be able to go into a wholly impartial tribunal, namely, the federal court sitting in that state."

Illinois Conservation Bill Gets Committee Approval

The senate oil and gas conservation committee of the Illinois legislature Wednesday recommended the state administration's bill to create a three-man commission with broad authority for regulating oil production and operations.

The measure, called a "model petroleum conservation bill" by its advocates, was approved by the committee after former Governor John Stelle urged its recommendation. Stelle formerly was one of the most bitter opponents of state oil regulatory laws. He explained his revised stand by saying that he had been asked by President Roosevelt and Mayor Edward J. Kelly of Chicago to support the bill as a means of helping the war effort.

The measure's provisions, he said, would be instrumental in helping to produce 25 percent to twice as much more gasoline. He added that if it is passed by the legislature, repressuring of oil fields will "mean a saving of hundreds of cars of gasoline."

Allowables Conform with Quotas Fixed by PAW

Leading producing states have fixed allowables for June in close conformity with quotas certified by the Petroleum Administrator.

The Oklahoma Corporation Commission on May 26 fixed the state allowable for June at 371,500 barrels per day, this total including 30,000 barrels of distillates and light ends. PAW's figure was 373,500 barrels, compared with 379,000 for May and actual production by Oklahoma of 423,200 barrels daily in June, 1942.

The Kansas Corporation Commission on May 25 recommended an allowable of 300,000 barrels daily for the state in June, including 5000 barrels of distillate and light end products. Formal approval is anticipated in an early announcement by the commission. The 300,000 barrels is the same as recommended by PAW and compares with PAW's figure of 309,700 for May and actual production of 275,600 barrels per day of all petroleum liquids in Kansas in June, 1942.

Louisiana's Department of Conservation set that state's allowable production of all petroleum at 332,138 barrels daily for June, compared with 330,800 certified by PAW and compared with 359,300 daily certified for May. Actual production in June of last year was 323,600 barrels per day. Director of Minerals H. W. Bell attributed the decrease for June to two factors: apparent realization of PAW that Louisiana could not produce at the May quota rate without damage to conservation and increased pipe line capacity in Texas, which relieved the state of a part of its burden of supplying crude requirements.

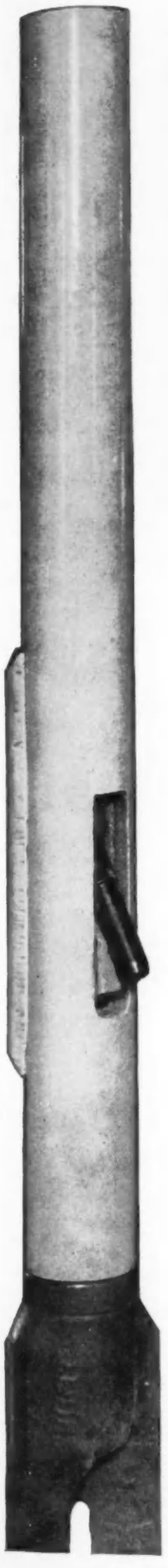
The Texas Railroad Commission a week ago issued orders for June calling for daily average production of all petroleum estimated at 1,603,709 barrels daily, including 116,000 barrels daily of distillate and condensate. (The Oil Weekly, May 24, 1943, p. 46.) PAW had certified 1,602,000 barrels daily for Texas in June, compared with 1,562,000 in May and compared with only 1,278,200 barrels per day of actual production in June of last year.

More Texas Permits For Dual Completions

Hearings held by the Texas Railroad Commission last week indicate that the program of dual oil completions is beginning to spread over Texas. Less than a month ago the first permit of this kind was issued in the Sowell field.

Last week Magnolia Petroleum Company requested permission to handle two of its West Ranch wells in this manner and The Chicago Corporation asked for a permit for one well in the Stratton field, Nueces County.

The commission for sometime opposed this program, but because of the saving



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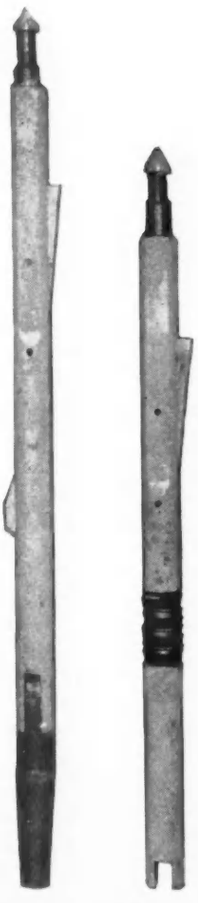

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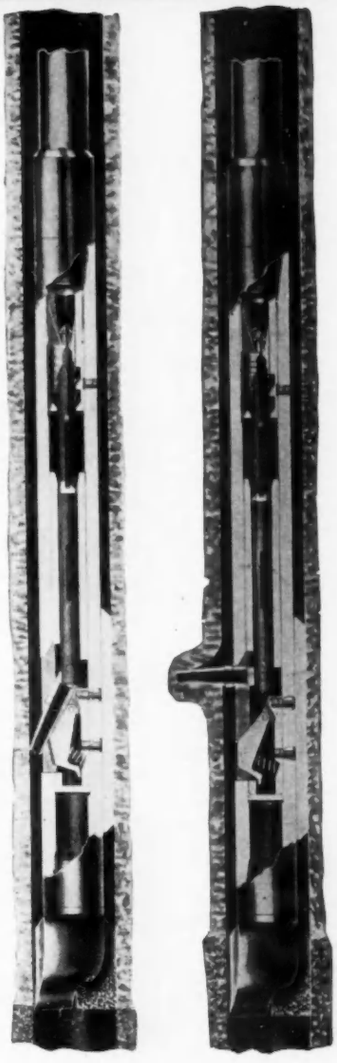

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in steel and labor resulting from such operations, it has permitted a few wells to be handled in this manner. So far, however, regulations have been drawn carefully to require separation of the oil produced from each reservoir.

Oil Firms Adopt 48-Hour Week; Raise Salaries

Several thousand Oil employes went on the 48-hour work week schedule during the past two weeks, and simultaneously received wage and salary raises.

Humble Oil & Refining Company will begin working 48 hours per week on June 1. Office hours will be from 8 a.m. to 5:15 p.m. with 30 minutes for lunch for Monday through Friday, and from 8 a.m. to 12:15 p.m. on Saturday. The extended work week is necessary due to the loss of employes to military service and to the increase in work resulting from participation in the war effort, the announcement stated.

Humble employes subject to the provisions of the Wage-Hour Act will receive additional compensation at "time and half" for hours in excess of 40 per week. In accordance with a formula approved by the Salary Stabilization Unit of the United States Treasury Department, classified salaried employes not subject to the Wage-Hours Act will receive an increase in earnings of 30 percent on salaries up to $300 per month, an increase of $90 on salaries from $300 to $400 per month, and 20 percent on salaries from $450 to $600 per month.

Stanolind Oil & Gas Company went on the 48-hour week on May 23, and is paying "time and half" as required, but no statement was made as to salary increases of employes not affected by the wage and hour act.

Wildcat Promises New Field For Colombia Near Coast

A new oil field for Colombia is promised through performance of the wildcat, El Dificil No. 1, of Cia. de Petroleos la Estrella de Colombia, Shell company subsidiary, in the Departmento Magdalena, about 60 miles from tide water and 100 miles south of Santa Marta on the Caribbean, much nearer the coast than previously established production in the country.

Drilled to 5930 feet, on a major structure, the well is credited with having flowed 130 barrels per day of 46-gravity oil through a 3/16-inch choke from a 600-foot section of porous limestone.

This discovery is of particular importance by reason of the advantage it has from the standpoint of possible pipe line outlet. A line to the coast would be not only comparatively short but also would traverse relatively level terrain.

The Shell interests at present are drilling also another wildcat, Brillante No. 1, about 20 miles southeast of El Dificil.

Texas Areas Joined

An order issued by the Texas Railroad Commission last week provides for the union of the Mascho and West Fuhrman fields in Andrews County. The fields were consolidated and rules for West Fuhrman were adopted. The field hereafter will be known as the Mascho field.

Employment Stabilization Plan Affects Oil Operators and Manufacturers

Practically every employer and employe within the states of Texas, Louisiana and New Mexico are affected by the terms of the "Limited Employment Stabilization Plan for Region X of the War Manpower Commission," which governs the hiring and transferring of workers from one job to another by establishing definite limitations and procedures for such actions.

The order is intended to facilitate transfer of workers from non-essential activities to essential activities and to stabilize employment in industries classified as essential. Practically all the petroleum industry has been classified as an essential activity by the Manpower Commission, including: production of petroleum and natural gas (which includes drilling, rig-building and maintenance operations); petroleum refining; pipe-line operations; production of explosives; production of rubber products, and production of oil-field and refinery machinery.

LIMITED EMPLOYMENT STABILIZATION PLAN FOR WAR MANPOWER COMMISSION REGION X

(Texas, Louisiana and New Mexico)

In order to facilitate transfer of workers from other than essential activities to essential activities and to stabilize employment in essential activities, the following Limited Employment Stabilization Plan is hereby adopted and shall apply in War Manpower Commission, Region X:

I. *Coverage of the Plan*

All areas and activities in Region X shall be subject to the provisions of this plan, with the following exceptions:

A. Activities in the Beaumont War Manpower Area.

B. Non-ferrous metals and lumbering activities in Texas and New Mexico.

Agriculture shall be subject to the provisions of this plan until such time as an Employment Stabilization Plan is developed specifically for agricultural activities.

II. *Definitions*

A. War Manpower Commission, Region X, is defined as the states of Louisiana, Texas and New Mexico.

B. Essential activity means any activity in the War Manpower Commission List of Essential Activities, and any activity approved by the Regional Manpower Director as a locally needed activity.

C. New employe means any individual who has not been in the employ of the hiring employer at any time during the preceding 30-day period.

D. New employment means employment with an employer by whom the individual has not been employed at any time during the 30-day period preceding such employment.

E. Full-time employment is defined as employment of not less than 40 hours per week.

III. *Workers previously engaged in other than essential activities for work in essential activities.*

Any employer engaged in an essential activity may hire for work in such activity any new employe who for the preceding 30 days was not engaged in an essential activity.

IV. *Workers previously engaged in essential activities for work in other than essential activities.*

No employer shall hire for work in other than an essential activity any new employe who during the preceding 30-day period was engaged in an essential activity if the wage or salary rate to be paid by the employer would exceed the rate most recently earned by such employe.

V. *Workers previously engaged in essential activities for work in other essential activities.*

Any employer engaged in an essential activity may hire for work in such activity any new employe who during the preceding 30-day period was engaged in an essential activity without regard to his preceding wage rate or salary scale, provided the worker presents a statement of availability issued by the worker's last employer or by the War Manpower Commission.

VI. *Issuance of statement of availability.*

Any worker employed by an employer engaged in an essential activity shall be issued a statement of availability by his employer or by the War Manpower Commission whenever the worker:

A. Is discharged by his employer.

B. Is laid off for an indefinite period or for a period of seven or more days.

C. Can establish that his present employment does not utilize him at his highest skill, or that he is not being employed full time.

The War Manpower Commission may issue a worker a statement of availability when it is established that his separation from his present employment in essential activity would further the war program.

No statement of availability shall be issued solely on the ground that an individual's wage rate or salary scale is substantially less than that prevailing in the locality for the same or substantially similar work.

A statement of availability shall contain the worker's name, his Social Security account number, if any, the name and address of the issuing employer or War Manpower Commission officer and office, the date of issuance and a statement to the effect that the worker may be hired elsewhere in an essential activity. The inclusion by the employer on such statement of any information other than that required in this section shall be deemed a violation of this section of the plan.

VII. *Acceptance of employment by worker.*

No individual shall accept new employment with an employer if the employer is prohibited from hiring him by this plan.

VIII. *Employe-employer agreements.*

Nothing in this plan shall be construed to prejudice existing rights of an employe under any agreement with his employer.

IX. *Appeals.*

Any worker who is refused a statement of availability by his employer may present the facts to and request a statement of availability from the United States Employment Service of the War Manpower Commission. Each local office of the United States Employment Service shall review requests of workers for statements of availability, and after appropriate investigation shall issue such statements in accordance with the provisions of this plan. The United States Employment Service shall issue or refuse to issue a statement of availability within five days after receipt of such request.

Any worker or employer who feels that any action or failure to act by the United States Employment Service is unfair as applied to him may appeal to the Local Appeals Panel, such panel to consist of an equal number of representatives of labor and management with the United States Employment Service local office manager acting as non-voting chairman of the panel.

Any worker or employer who feels that the decision of the local appeals panel is unfair as applied to him may appeal further to the area management-labor war manpower committee. The decision of the area management-labor war manpower committee, if concurred in by the area director or other authorized area representative of the War Manpower Commission, shall be final. In event of disagreement within the area management-labor war manpower committee or between the committee and the area director, the matter shall be referred to the regional manpower director. The regional manpower director shall consult with the regional management-labor war manpower committee and reach a decision. Such decision shall be final.

In any event, the final decision reached at any level shall be communicated to the appellant within 14 days from the date of original appeal. During the appeals process the United States Employment Service shall effect a temporary arrangement between the employer and employe, which will be in the best interest of the war program.

X. When an area employment stabilization plan is developed within a war manpower area and approved by the regional manpower director, such area plan shall supersede in that area the provisions of this limited regional employment stabilization plan.

XI. This Plan shall become effective at 12:01 a.m., April 29, 1943.

Approved J. H. Bond,
Regional Manpower Director,
War Manpower Commission, Region X.

Here's *Why* V-Belts with the

CONCAVE SIDE

Give Better Service . . . Longer Wear

What Happens When a V-Belt Bends

FIG. 1

FIG. 2

436

If you want longer belt wear and greater efficiency in your V-belt drives, make this simple test:

Take *any* V-Belt that has *straight* sides. Bend that belt as it will bend in going around its pulley. As the belt bends, grip its sides firmly between your fingers and thumb. You will *feel* the sides of the belt *bulge out* —as shown in figure 1 on the right.

Now look at figure 2. There you see what happens when you bend a belt that is built with the patented *concave* side. By building the side *concave*, the bulge has been *taken out* of this belt *to begin with*. When this belt bends, the sides become *perfectly straight* and the shape of the belt *exactly fits* its sheave groove. Two savings result:—

First:—With no outbulge of the sides, the *full width* of the belt *uniformly* grips the sheave-groove wall. This means *uniform wear—longer life!* Second:—Exact fit in the sheave groove gives the belt a *firmer hold* which carries heavier loads without slippage. This again saves belt wear—gives a steadier, more efficient drive operation.

Only V-belts built by Gates are built with the Concave Side, a Gates patent.

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Light and Heavy Fuel Oils Added to Storage; Draft of Gasoline Normal

The industry during the week ended May 22 continued to maintain crude oil production and refinery runs well in line with the demand for petroleum products.

Crude runs to stills were reduced 70,000 barrels per day but still were 9 percent higher than in the corresponding week last year. Crude oil production increased somewhat and was close to the peak of the year and 11 percent higher than a year ago. In reflection of the lower runs to stills, production of each of the three major products declined, but the decreases resulted in reduction of stocks of only gasoline, as the output of both light and heavy fuel oils remained sufficiently high to permit some accumulation in storage.

The crude runs to stills averaged 3,698,000 barrels per day, representing 76.6 percent of the nation's present refining capacity. Plants had operated at 78.1 percent in the previous week. The new rate of runs was 306,000 barrels per day (9%) above that of 3,392,000 barrels daily in the week of May 23, 1942. The 70,000 barrels reduction of runs in the week of May 22 occurred in spite of stepping up of runs in the Rocky Mountain and California districts. In the interior of the country refineries are operating around 85 percent of capacity, in the Rocky Mountain district at 60 percent, in California at 89 percent, and in the East Coast-Southwest districts at 69 percent.

Only a normal withdrawal of gasoline from storage occurred (1,784,000 barrels) in the week of May 22, in spite of the fact that production of that product was 206,000 barrels lower than in the previous week, a decline of about 30,000 barrels in the daily average output. Having totalled 10,300,000 barrels during the week, the production of gasoline was 108,000 barrels, or 1 percent larger, than in the corresponding week last year. There were reductions of gasoline production in all districts except California and Oklahoma-Kansas. Gasoline stocks currently are in favorable relationship to the demand for that product, being 12 percent lower than a year ago, while demand also is down about that amount.

Stocks of finished and unfinished gasoline totalled 85,166,000 barrels on May 22, down 1,784,000 from a week previously and almost 12,000,000 barrels (12.2%) under the 97,021,000 barrels on hand May 23, 1942. All districts drew on storage in the week of May 22 with exception of California, which added a negligible amount. The combined East Coast-Southwest districts took 1,238,000 barrels from the tanks, and therefore accounted for about ⅔ of the week's reduction in stocks.

Figures on residual fuel oil were favorable, having shown the addition of 406,000 barrels to storage, in spite of the fact that production for the week was 318,000 barrels less than in the preceding week, as the output still was comparatively high. The production of 7,442,000 barrels in the 7 days ended May 22 was 449,000 barrels greater than

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED May 22	May 29
Arkansas	72,000	72,550
California	779,000	765,450
Long Beach	33,100	33,900
Midway-Sunset	56,200	56,550
Kettleman Hills	43,300	43,400
Wilmington	94,800	96,100
Rest of State	551,600	535,500
Colorado	6,450	6,500
Illinois	218,750	210,500
Salem	29,000	31,100
Louden	40,300	40,800
Other New Pools	138,050	127,600
Old Pools	11,400	11,000
Indiana	13,100	14,150
Kansas	311,650	299,450
Kentucky	22,100	22,450
Louisiana	348,350	348,400
North Louisiana	87,050	87,200
South Louisiana	261,300	261,200
Michigan	58,750	57,800
Mississippi	56,450	54,000
Missouri	95	95
Montana	20,250	21,450
Nebraska	2,100	2,000
New Mexico	97,250	97,400
New York	14,500	14,050
Ohio	9,050	8,850
Oklahoma	318,700	323,250
Oklahoma City	61,000	56,700
Seminole Area	73,750	74,200
Rest of State	183,950	192,350
Pennsylvania	46,850	46,100
Tennessee	35	35
Texas	1,504,400	1,503,850
Upper Gulf Coast	375,550	375,500
East Texas Field	339,400	339,250
Rest of Eastern Texas	124,550	124,650
Lower Gulf Coast	139,050	138,950
Southwest Texas	58,600	58,550
South Central Texas	17,100	17,050
West Texas	226,950	226,850
North Texas	131,900	131,850
Panhandle	91,300	91,200
Utah	10	10
West Virginia	9,250	11,000
Wyoming	97,700	92,850
Total United States	4,006,790	3,972,190

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gas Oil & Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-322	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	4,020	5- 8	3,849	5- 1	242,916	5- 1	94,159	3-20	42,913	1- 2	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	82,420	1- 2	30,732	4- 3	66,991	5- 1

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gas Oil & Distillate Production Weekly	Gas Oil & Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3,267	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	.....	31,384	.....	79,628
June 27	3,719	3,581	253,364	10,713	88,396	.....	32,851	.....	77,304
July 25	3,691	3,658	249,262	10,864	82,281	.....	35,966	.....	77,816
August 29	3,964	3,697	249,007	11,300	80,831	.....	42,060	.....	78,034
September 26	3,909	3,802	242,785	10,954	80,550	.....	45,945	.....	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 1	3,919	3,849	242,916	10,977	90,029	3,629	31,202	8,314	66,991
May 8	4,020	3,755	240,775	10,581	88,166	3,795	31,663	7,853	67,577
May 15	3,984	3,768	241,457	10,506	86,950	3,797	31,891	7,760	67,311
May 22, 1943	**4,006**	**3,698**	.....	**10,300**	**85,166**	**3,682**	**32,193**	**7,442**	**67,717**
May 23, 1942	3,599	3,392	[4]254,202	10,192	97,021	3,034	29,658	6,993	79,296
Change:									
In week	+22	−70	+682	−206	−1,784	−115	+302	−318	+406
In year	+407	+306	−12,745	+108	−11,855	+648	+2,535	+449	−11,579
In year	+11.3%	+9.0%	−5.0%	+1.0%	−12.2%	+21.3%	+8.5%	+6.4%	−14.6%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, May 16, 1942.

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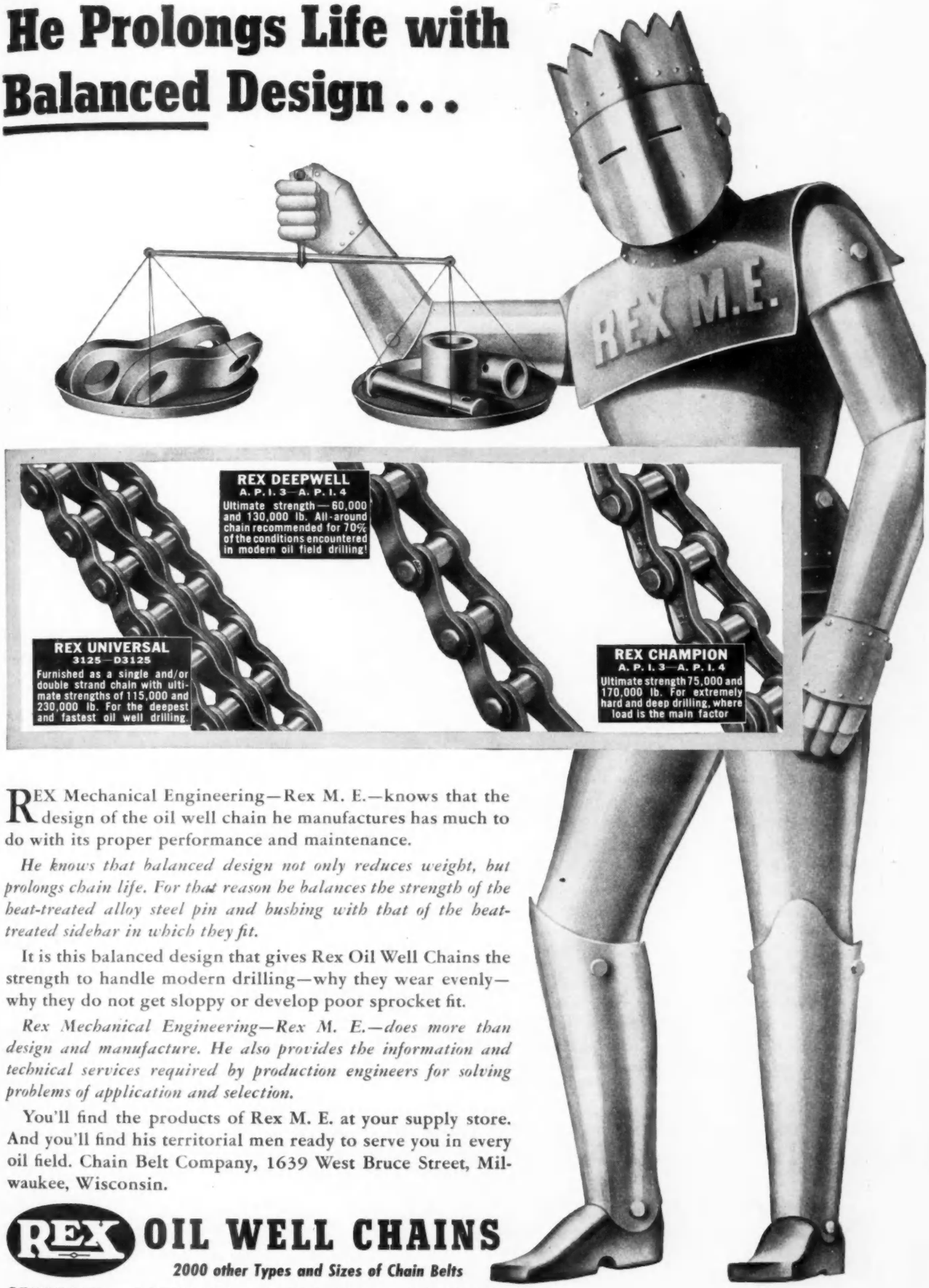
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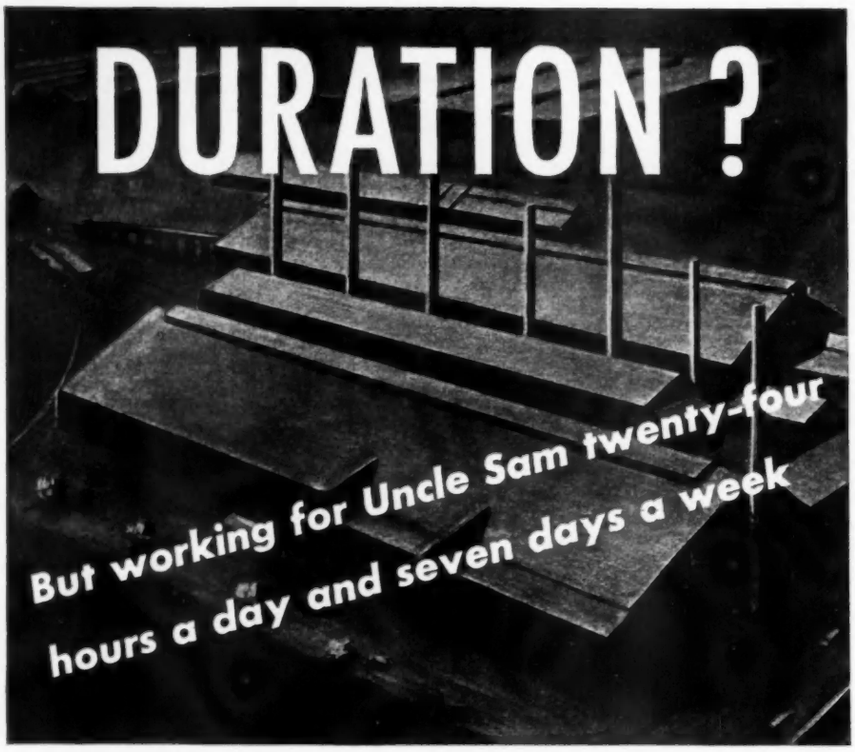

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that of 6,993,000 barrels in the week ended May 23 last year, an increase of 6.4 percent. This increase in production over a year ago is fairly satisfactory, as the demand shows no great change from a year ago following the conversion of many consuming units to other fuels, in accordance with government directions. Production of residual fuel was lower than in the previous week in all districts except the Appalachian and Rocky Mountain. But all districts added to storage except the Middle West. The present stocks of 67,717,000 barrels of heavy fuel in the United States are 11,579,000 barrels (nearly 15%) under a year ago.

Production of gas-oil and distillate fuel amounted to 3,682,000 barrels in the week of May 22, a decline of 115,000 barrels from the amount produced in the previous week, but 648,000 barrels, or 21%, more than the output of 3,034,000 barrels in the 7 days ended May 23, 1942. This large increase in production over a year ago is bringing satisfactory results in building up stocks of heating oils for next winter's use. The stocks of light fuel oils increased 302,000 barrels in the week of May 22, an accumulation of 45,000 barrels per day, and they totalled 32,193,000 barrels at the end of the week. The latter quantity was 2,535,000 barrels (or 8½%) more than the 29,658,000 barrels in storage May 23, 1942. This 8½ percent increase in stocks, compared with a year ago, is in line with the increase in consumption.

Crude oil production averaged 4,006,000 barrels per day in the May 22 week, only 14,000 barrels under the highest level of the year. The output was 407,000 barrels per day, or 11%, higher than in the corresponding week last year.

In consequence of the high rate of production, the accumulation of crude oil in storage was resumed. Stocks of crude totalled 241,457,000 barrels on May 15, an increase of 682,000 barrels for the week. This total was, however, almost 13 million barrels (5%) less than the 254,202,000 barrels in storage a year previously.

Oils Are Generally Scarce; East Coast Shortage Acute

Increased seriousness of shortages characterizes present markets in the industry. The East Coast district continues to suffer most from the scarcities, but supplies are inadequate also in the Middle West, while refiners of the upper Mid-Continent are trying unsuccessfully to buy from each other, in seeking to fulfill the heavy demand they are encountering.

Effects of the disruption of oil transportation across tributaries of the Mississippi were felt in the latter part of last week, as hard-pressed suppliers of the East Coast district had their receipts of materials somewhat further restricted. The floods not only temporarily stopped movement through the Big Inch pipe line but also washed out railway bridges and interfered with movement of tank cars. While the pipe line has been put back in operation, it will be a considerable period before tank car shipments can be restored to the former highly efficient basis; and the East has been warned of the necessity of further restricting use of petroleum products, although civilian consumption already is far below normal.

Although Eastern suppliers have been able to take care of demand for kero-

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PROVERBIALLY, just one straw too many breaks a camel's back.

In our present struggle to crush the Axis, it may be just one shell too many, a few too many planes . . . a few too many bombs on Berlin and Tokio . . . that will crack the backbone of Axis resistance.

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Morse would like to work with you, to have a hand, perhaps, in speeding the production of the "straw too many" that will break Axis resistance.

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sene and light fuel oils, they have become desperate over inability to meet the requirements of gasoline and declare that the gasoline business is near the breakdown stage. Heavy military demands already had eaten deeply into available supplies, and the troubles brought by the floods accentuated the seriousness of the situation. Consequently, Army and Navy authorities were asked to release some gasoline stocks or overland transportation facilities to relieve the gasoline shortage, especially at Washington and Baltimore. In the latter city there was danger of interference with war production through lack of motor fuel for the conveyance of workers.

The shortage in the East Coast district has carried over into the Middle West, as refiners and marketers in the latter region have increased their shipments eastward to help relieve the Eastern situation. Many suppliers heretofore have been shipping much of their material to the East, and there were reports last week that some refiners had been instructed to send all available gasoline to the East Coast immediately.

Refiners of the Western Pennsylvania district continue to encounter strong demand for all the materials they can supply, and quotations on all products are unchanged and steady.

Reports from the upper Mid-Continent indicate continued steady withdrawals of products from storage in meeting heavy demand. Refiners generally are restricting sales to their regular customers, and some are unable even to supply those requirements, with the result that there is much unsuccessful effort among plant owners to buy from each other. Lubricants are in good demand, with ordinary bright stocks especially strong, in reflection of government withdrawals of solvent refined bright stocks.

Gulf Coast markets remain generally firm, with supplies of kerosene and light fuel oils reported scarce and with gasoline continuing to move in good volume. Stocks of gasoline are said to be very closely held.

West Texas Geologists Award Student Field Course

The West Texas Geological Society has awarded a geological "field scholarship" to William Terry Elkin of the junior class at Midland High School. This award consists of tuition and expenses for the summer field course at Princeton University's geological summer camp in the Bighorn Basin near Cody, Wyoming, from July 5 to August 14, 1943. Purpose of the award is to encourage interest among high school students in exploratory geology as a possible professional career.

Elkin was chosen by the society's merit award committee from among members of the junior class on the basis of his scholastic record and personal qualifications for field work.

Princeton's summer field courses in geology are under the supervision of Dr. W. T. Thom, Jr., chairman of the department of geological engineering, who is known for his work in economic geology, theoretical geophysics, and geological teaching. A year ago he tried the experiment of introducing the subject of field geology to high school students. It was successful and is being continued as a regular procedure. If the high school student decides to continue in geological work he finds himself, as a freshman in college, as far advanced in his field knowledge of geology as the ordinary junior or senior student in geology. An experienced geologist acts as instructor and supervisor of each group of three or four of these younger boys.

WILLIAM TERRY ELKIN

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Illinois

Clay County Pool Opener Has 800-Barrel Initial

L. G. Waggoner's Pilcher 1, C SW NW NW 13-5n-5e, 1½ miles east of Iola field in Clay County, flowed 800 barrels of oil, natural, through tubing on initial 24-hour test. It is producing from McClosky line at 2461-66 feet. Offsets have been staked by Kingwood Oil Company and Central Pipe Line Company.

White County: E. J. Kubat's Johnson 1, Section 19-4s-11e, has been plugged back from a dry McClosky at 3120 feet to test a show of oil in the Degonia sand at 1980-2020 feet, where a drill-stem test recovered 300 feet of oil-cut mud and 30 feet of salt water in 40 minutes.

Whisenant and Trenchard have staked location for an interesting wildcat 9 miles east of Carmi, E. E. Owen 1, SW SW NW 18-4s-14w, scheduled for early drilling.

Franklin County: Ohio Oil Company's U. S. Coal and Coke 1, NE NE NW 13-6s-3e, a wildcat, swabbed 2 barrels of oil and ½ barrels of water an hour following an acid treatment in Lower O'Hara lime. A second shot of acid was to be used. The pay section is at 2890-2910 feet where casing was perforated with 93 shots.

Floods throughout the southern sector of the state have substantially curtailed operations. Only four wildcat locations were reported during the past week and many drilling wells, both wildcats and in proven areas, were shut down by high waters.

Most operators predicted, however, that activity would reach its greatest peak of the year as conditions improve, because of the backlog of work now accumulating.

Kansas

Sheridan County Area To Get Well Each Month

Union Oil Company of California has started operations at Pratt 2, NW SE NW 23-8s-26w, in the area opened by the company with Pratt 1, which drew an initial potential of 1378 barrels of oil from Lansing-Kansas City lime for first production in Sheridan County. The company plans to drill at least one well per month in the area. The discovery, located on a 5000-acre block, had pay at 3808-17 feet which yielded 41-gravity oil without treatment. The area in which the discovery was made had been designated as the Studley pool and is the northwesternmost production in Kansas.

Russell County: Coralena Oil Company's Krug 2, SW NE SE 9-14s-14w, has been completed as the largest producer in the Witt pool. Producing from Lansing-Kansas City lime at 2976-3007 feet, the well had a potential of 1077 barrels daily.

Edwards County: Cities Service Oil Company's Wilson B-1, SW NW SW 4-25s-16w, has extended the Belpre pool northeast ½ mile with production from Lansing lime at 3957-71 feet. After 4000 gallons of acid the well yielded 128 barrels of oil in 4 hours.

Marion County: A new oil pool in the Lost Springs area has been opened by Derby Oil Company with Rogers 1, CSL SE SE 9-17s-4e, which found pay in the Mississippi lime topped at 2346 feet. The well has been assigned initial potential of 100 barrels daily. Total depth is 2365 feet.

Cowley County: J. J. Lynn et al's Newfield 1, CWL NW NE 11-34s-4e, is showing for a pool opener with Mississippi lime pay found at 3104-07 feet. Seven-inch pipe was set at 3100 feet for test of saturation. Total depth of hole is 3124 feet.

Oklahoma

Osage County Strike Makes 200 Barrels Daily

Bartlesville sand production discovered in an area once virtually condemned by oil operators is opening a new pool in Osage County a short distance northwest of the Tulsa city limits. W. A. Davidson's Davidson 1, 6-20n-12e, is the well which was drilled by Davidson, a dairy farmer, on his own land. The sand was topped at 1513 feet and at 1515 feet oil showed. When deepened to 1526 feet the hole filled with oil and started flowing, but was shut in for storage. Estimates place potential production at 200 barrels daily. Development probably will not exceed more than a square mile, as the possibilities of the area have been well defined by a series of dry holes which ring the discovery.

Hughes County: Deep Rock Oil Corporation's Price 1C, NE NE 29-7n-10e, flowed 25 barrels of oil the first hour, before plug was completely drilled for a test of Cromwell sand saturation at 3865-82 feet. It was making 3,500,000 cubic feet of gas.

Washita County: Gulf Oil Corporation's Hopkins 1, C NW SE 8-8n-20w, has a show in granite wash at 5552 feet, and pipe is being run to test. There was sufficient gas to spray some oil. Total depth is 5567 feet.

Coal County: Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Cushing Royalty 1, NW NE SE 22-3n-9e, is nearing completion as gas producer in the Cromwell sand after drilling to the Arbuckle topped at 6130 feet. When casing was perforated with 210 shots between 3525-65 feet and 3575-90 feet, the well showed for 18,000,000 feet of gas. Greater gas recovery may be expected with additional perforations.

Pottawatomie County: Stanolind Oil & Gas Company's Atwater 1, C SE NE 34-8n-3e, a wildcat south of the McComb pool which topped Hunton lime at 4560 feet, is producing approximately 129 barrels daily as it nears completion. Saturation was recovered from 4604-40 feet with total depth 4640 feet.

New Mexico

Eddy County Wildcat Swabs 75 Barrels Hour

Robert McKee and A. L. Jones' State 2, C SE SE 3-19s-29e, 4½ miles south of Loco Hills, Eddy County, tested 75 barrels of 38-gravity oil on swab after acidizing broken pay at 2600 feet. This wildcat passed up a possible small pumper in sandy lime at 1697-1721 feet.

Lea County: Olson Oil Company and Atlantic Refining Company's Langlie 1, first Ordovician test for Southeastern New Mexico and a failure in the deeper zones, swabbed two barrels of oil an hour after using 2000 gallons of acid through perforations at 4900-90 feet. Another acid treatment will follow.

West Texas

East Permian Basin Prospecting Stimulated

Production increase recorded by W. Guthrie and Cosden Petroleum Corporation's Allen 1, recent northeastern Howard County discovery from Clear Fork or Lower Permian at 4028-96 feet, will stimulate deep prospecting on the east side of the Permian Basin. The well pumped 98 barrels of oil and 2 barrels of salt water in 14 hours after two-stage treatment with 3000 gallons of acid then pumped and flows 169 barrels of oil in 22 hours, establishing it as a commercial well.

Winkler County: Stanolind Oil & Gas Company and Shell Oil Company's Blue 1, indicated third consecutive Ellenburger discovery of the county, was coring broken saturation Dolomite at 10,642 feet. Tester has not been used since recovering oil and gas at 10,493-10,539 feet.

Amon Carter's Walton-Pure 2-C, deep strike for the Keystone field, has been delayed in deepening due to discovery of additional casing leaks between 6300-6800 feet.

Magnolia Petroleum Company has authorized another test for its Ellenburger discovery area on the Walton ranch, and will drill ¾ mile northwest of its record-depth producer for district. The company is underway on ¾-mile southeast outpost. The production trend of these deep areas is northwest to southeast.

Yates Field: Standard Oil Company of Texas' Douglas 1, southwest edge of the most prolific shallow field, was drilling shaley-lime at 8295 feet with only 2 possible deep zones remaining for production. This test entered Simpson at 7730 feet and Tulip Creek at 7850 feet, with elevation of 2595 feet. In the event it is a failure, deep production values placed upon all Yates field properties will be revised, although the structure is ample to account for deep production in another sector.

Pecos County: Culvertson & Irwin

and Union Oil Company's Heiner 1, ⅝-mile southwest of Heiner 1-well pool, rated 2,000,000 feet gas with oil spray at 5400 feet in Ellenburger, topped at 5029 feet, 107 feet high. Sample acid test is slated to be made with tubing packer before running oil string. Phillips Petroleum Company's Price 1, 28 miles southeast of Fort Stockton, was drilling black shale at 11,310 feet, having logged more than 2500 feet of this zone.

Andrews County: Fullerton Oil Company's University 1-A, ½-mile south extension for the Fullerton field, established new peak potential in flowing 2125 barrels after acid treatment of Clear Fork at 6800-7243 feet, having plugged back from water at 7287 feet. Skelly Oil Company's University 1-K, 2¼ miles east by north of Emma pool and a failure in Clear Fork, topped at 5600 feet, was coring at 7140 feet.

North Texas

Pools May Follow North Texas Deep Lime Tests

Deep lime prospects in Archer, Wilbarger and Jack Counties showed sufficient production on preliminary test to indicate new pool openers, thus paving the way for further expansion of development in North Texas. The Walnut Bend field will remain the most active drilling center as result of the prolific Winger sand being extended a mile to southeast.

Archer County: Phillips Petroleum Company's Wilson-Luke 1, ¾-mile southwest of the Chalk Hill pool's Canyon and Strawn area, opened new Bend area in flowing 23 barrels oil per hour on short natural test through ¾-inch choke from perforations at 4881-91 feet, and will be acidized. Bend was entered at 4881 feet with broken saturation to 4920 feet. Ellenburger at 5573-5623 feet proved dry. Company paid $7.50 cash and $200 per acre out of oil early this year for its supporting block of 220 acres.

Wilbarger County: British-American Oil Producing Company's Wilkinson 1, 6¼ miles northeast of Harrold pool, nearest producing area, indicated 30 to 50 barrel well on swabbing test, and will be acidized. Production is from perforations 5845-63 feet and 5780-90 feet in Bend, or Marble Falls. Top of Mississippi called at 5871 feet, but no test made of this zone in drilling to 6126 feet.

Jack County: Standard Oil Company of Texas and Hanlon & Buchanan, Inc.'s Peek-Shell 1, 3 miles south by east of Ellis pool, nearest deep area, unloaded 1000-foot water cushion used in drilling plugs from 5½-inch at 4578 feet with spudder along with head of oil and gas within 5 hours. Tubing will be set for completion. Production is from Bend saturation at 4579-84 feet. Partnership's Carter 1, recent Strawn discovery at 3518-28 feet, flowed 128 barrels oil daily on ½-inch choke, and has been connected by Sinclair Refining Company. Taubert-McKee and Sinclair Prairie Oil Company's Boyd 3, west offset to Taubert-McKee pool discovery, preparing to squeeze bottom 7 feet after testing salt water in Ellenburger 6386-6420 feet. Top of Ellenburger is 42 feet low. Boyd 2, 2715 feet south of producer, was a failure even though 15 feet high on Ellenburger.

Cooke County: Fred Snuggs-McElreath-Suggett & Seitz's McGeorge 1, outlined probable mile southeast extension for Winger sand in Walnut Bend area in recovering 270 feet of oil and 455 feet of salt water in using tester at 5509-21 feet, with 2400 pounds shut-in bottom hole pressure, and was fishing at 5809 feet in Simpson. Main oil pay is estimated first 8 feet of Winger, topped at 5505 feet. Sinclair Prairie Oil Company's M. B. Harrison 1, Block 71, flowed 253.8 barrels natural on 3-hour open tubing test from Winger perforations 5490-5576 feet, and R. E. Harrison 1, Block 70, flowed 210.6 barrels in 3 hours natural at 5487-5561 feet, having plugged back from Simpson at 5564-5741 feet, with 5½-inch at 5487 feet.

Montague County: Stanolind Oil & Gas Company's Cobb 1, wildcat and 2 miles northwest of Bowie, drilling 6415 feet after recovering 110 feet of oil- and gas-cut mud when tester used at 6312-36 feet. Continental Oil Company's Hoeldtke 1, southwest offset to its Ketchum pool discovery pumper, cemented 7-inch on top of Strawn sand at 3342 feet after recovering 75 feet of oil and 75 feet of mud and salt water on drill stem test at 3343-47 feet.

East Texas

Robertson County Wildcat Has Showing in Edwards

Robertson County has entered its first important bid as a source of production through Magnolia Petroleum Company's Doremus 1, Sam Kinney survey, 2¼ miles northwest of Calvert, having logged nominal oil stain and odor in Edwards lime at 4699-4705 feet. Drill-stem test yielded 1080 feet of salt water. This prospect is 1920 feet northwest of a recent Edwards lime failure by the company and is 125 feet high on Lower Cretaceous markers. The company holds lease on 18,000 acres of the faulted structure and will continue explorations.

Hunt County: Stanolind Oil & Gas Company's Tilson 1, recent Paluxy strike for the Campbell faulted structure, pumped 150 to 175 barrels of oil and about equal volume of water. Production is from perforations at 4358-66 feet.

M. P. Stewart and Paul Dalton's Rollins 1, previously indicated Woodbine strike situated 3 miles northwest of Campbell, failed to fulfill early estimates on volume of oil yield after recovering circulating oil, and will attempt to exclude water. This wildcat entered Woodbine at 2639 feet, and tested through perforations at 2708-16 feet.

Trade: Gulf Oil Corporation purchased E. B. Germany's ⅝ interest in 12 wells, or a net of 7½ wells, on the Harris 44.7-acre lease, W. H. Castleberry survey, Longview sector of East Texas field, for $87,500 per well cash. Purchaser is credited with having posted an offer of $100,000 cash per well for full interest in the lease.

Wood County: Jackson & Fisher's McCarley 1, 4 miles southeast of Cartwright pool, nearest production, logged base of Austin at 4895 feet and nominal shows in sub-Clarksville before entering water at 4983-90 feet, and was drilling shale 5120 feet. Sohio Producing Company's Morgan 1, 2¾ miles southwest of Coke field, was drilling sandy-shale at 5110 feet. In the Alba townsite area, Orr et al's Rainwater 1 encountered additional water in Paluxy in deepening to 6535 feet, and is awaiting orders.

Southwest Texas

Deeper Production Found in DeWitt County

New discoveries and flank sand developments continue to hold interest in the Lower Coastal belt, one of the most active areas in the district. One of the most important discoveries of the year is the opening of deeper production in the Slick area of Goliad County, the new discovery being named Slick (Wilcox). Jackson County also continues to hold its share of development with a new pay opened at West Mauritz. Drilling and development as a whole is slightly brisker than three months ago, with a number of wildcats drilling and more scheduled to be drilled provided materials are available.

Discovery: Continental Oil Company is completing its discovery near the DeWitt County line in Goliad County. The well is Wood 1 and flowed an estimated 7 to 10 barrels of 34-gravity oil per hour from perforations at 7600-20 feet in the Carrizo sand, with 650 pounds pressure on tubing and 700 pounds on casing. The discovery, 7 miles southeast of Nordheim, is located in the east corner of a 148-acre lease in CEPI&M Company survey. The Carrizo sand was topped at 7503 feet, a gas-distillate sand was found at 7503-11 feet and 7552-67 feet. Oil sand was found at 7605-50 feet. Total depth is 8003 feet with 7-inch casing set to 7692 feet for completion.

Jackson County: John Coffee has completed Mauritz 4-B at West Mauritz to open a new producing horizon. Casing was perforated at 5589-95 feet and flow was 127 barrels of 28.5-gravity oil through 3/32-inch choke. Tubing pressure was 800 pounds, casing 1650 pounds. Total depth is 5640 feet with 5½-inch casing set to 5620 feet. This horizon is believed to correspond with the main pay at Mauritz, and is around 100 feet below the regular sand at West Mauritz. Location is in southwest corner of 45-acre tract in the northeast corner of M. L. York survey.

Outpost: Atlantic Refining Company is extending production easterly in Slick 1 at South Caesar. This well recovered 1500 feet of 35.2-gravity oil on a drill-stem test at 6539-44 feet in the Slick sand. Operators are reported coring ahead to Luling sand in attempt to establish another zone to production. It is believed the outpost is opening a new horizon for the field.

Live Oak County: Henderson Coquat's Goebel 1 has indicated the opening of a new field, possibly gas-distillate, 3 miles northeast of Oakville townsite and 2 miles southeast of shallow Oakville field. The well found a sand section at 6120-6200 feet showing oil, and a drill-stem test was run at 6908-35 feet showing 30 feet of distillate, no water, with 1900 pounds bottom-hole flowing pressure. Total depth is 6935 feet.

DeWitt County: Tide Water Asso-

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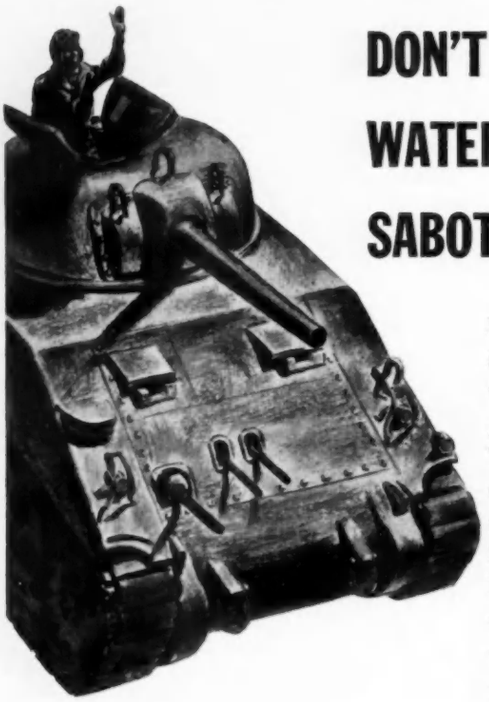

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ciated Oil Company has completed its west extension well at Nordheim, Gips 2, for 31 barrels of distillate and 18 barrels wash water in 11 hours from perforations at 7161-67 feet in Wilcox, with 2000 pounds tubing pressure and 2200 pounds on casing. On a previous test the well flowed 101 barrels of fluid daily with 80 percent being 42-gravity oil and the remainder salt water. Total depth is 8400 feet with Carrizo sand topped at 6989 feet.

Texas Gulf Coast

Wildcat Work Again Showing Decline

Outcome of the Sugar Valley prospect in Matagorda County will be determined soon with operators setting liner to make a completion test in a sidetracked wildcat. So far this discovery has not shown anything but gas-distillate. Wildcatting on the coast is on the skids again with slight chance for a pickup with materials becoming increasingly difficult to secure and with drilling contractors stacking rigs due to labor shortage.

Matagorda County: Superior Oil Company has set a string of liner inside the 7-inch casing in Peterson 1, wildcat discovery of Sugar Valley field. The well is bottomed at 11,854 feet in sidetracked hole where electric log was run. This discovery yielded gas-distillate when it was first tested around 10,715 feet.

Wildcats: Humble Oil & Refining Company has spudded its projected 10,500-foot wildcat in the Salt Bayou area of Jefferson County. It is McFaddin Trust 1-C, in I. D. Polk (William Rutledge) survey. This location has been waiting on rig for several weeks, and will be a thorough test of Frio sands.

Arkansas Fuel Oil Company has spudded its 10,500-foot wildcat four miles northeast of Smith Point in Chambers County with Frankland 1 drilling below conductor pipe. Location is in R. Frankland survey.

Polk County: Humble Oil & Refining Company is abandoning Whitforth 1, deep Wilcox test in North Livingston area. The hole is bottomed at 11,023 feet where side-wall samples were taken before abandoning. The well is several thousand feet inside the Wilcox, and no shows have been reported worthy of testing.

Waller County: Kirby Petroleum Company is preparing to make a flow test on Beckwith 1, semi-wildcat on the northeast flank of Katy field, being southeast of north flank oil production. A squeeze job is being made in the 6600-foot section preparatory to making perforations in sand at 6617-25 feet. Total depth is 7340 feet with 5½-inch casing set on bottom.

Ohio Oil Company is drilling below surface pipe in Smock 1, northwest of Stanolind Oil & Gas Company's oil discovery at Katy. Surface pipe was cemented at 1610 feet, and is located in Section 93.

Wharton County: Sinclair Prairie Oil Company is preparing to drill a test on the north flank of Boling dome. It is Taylor 1 and is on a 200-acre tract in Lovelock and Glasscock subdivision in S. F. Austin One-Third League. Projected depth is 3500 feet.

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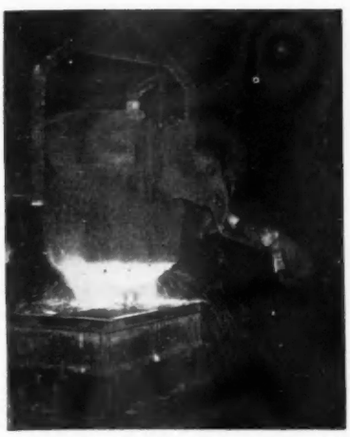

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Louisiana Gulf Coast

Second Well for Bear Field Ready to Test

A partial indication of the size of the recently discovered Bear field in Beauregard Parish is imminent with production pipe being set in an east outpost. While this second field well is being tested, the discovery of the Egan prospect in Acadia Parish has been shut in under considerable pressure. This discovery well assures the opening of a large gas-distillate reserve, however, there have not been indications of any oil production.

Beauregard Parish: Phillips Petroleum Company has set 5½-inch casing to make a flow test on First National Bank 1, east outpost to the discovery at Bear. The well, Section 27-6s-9w, was drilled to 6569 feet and will be completed in the Frio sand around 6500 feet. This field was opened three weeks ago with General Crude Oil Company completing Baldwin 1 for 151 barrels daily through ⅛-inch choke from perforations at 6512-20 feet in Frio sand.

Acadia Parish: Sun Oil Company has closed Daily 1, wildcat discovery of the Egan field. The well, located in Section 31-9s-1w, showed 3500 pounds tubing pressure when closed and operators had considerable trouble closing in the gas-distillate producer. Perforations were made at 10,610-25 feet, gas-distillate flowing in large volume.

Iberia Parish: The best well so far drilled in the Avery Island field has been completed by Humble Oil & Refining Company. Petit Anse 4, northwest of the discovery on the southwest flank, flowed 186 barrels daily through ⅛-inch choke with 1350 pounds on tubing. Perforations were made at 8970-85 feet. Miocene sand was found about level with that in Petit Anse 2, discovery producer.

Terrębonne Parish: Union Producing Company is nearing the 13,500-foot level in Fitzpatrick-Vizard at DeLarge. Operators ran electrical survey to 13,004 feet and then resumed drilling to the deep objective. A string of protection pipe was cemented at 11,450 feet. The company it attempting to establish this area, discovered by Fohs Oil Company, to gas production to supply its large line running through the area.

St. Mary Parish: A small extension has been given to east side Bayou Sale field with The Texas Company completing State-East Cote Blanche 3 as the third well in the bay. Perforated at 10,112-35 feet, the well flowed 284 barrels per day through 9/64-inch choke with 1700 pounds on tubing. Oil sand was found at 10,064-150 feet. The hole is bottomed at 10,150 feet with 7-inch casing set to that level.

W. R. THAWLEY, chief scout for Gulf Oil Corporation at Tulsa, has been named chairman of the Oklahoma nomenclature committee of the Kansas-Oklahoma Division of Mid-Continent Oil & Gas Association. He succeeds R. B. Curran, assistant to the president of The Carter Oil Company, who resigned.

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North Louisiana

Wildcat Work Shows Marked Increase

Wildcat drilling indicated a sudden spurt with 14 locations staked in widely separated areas in North Louisiana. It is a follow up of extensive geophysical exploration in the district and shows a probability for an intensive wildcat drilling campaign for the district later.

First producer in Tensas Parish, The California Company and Carter Oil Company's Rhodes 2, irregular 28-9n-10e, flowed 187 barrels of oil through 3/16-inch choke, from Wilcox at 4434-43 feet. This is a two-mile extension from Wilcox production at Lake St. John to the southeast.

In Concordia Parish, The California Company's deep wildcat, Community 1, SW irregular 4-9n-10e, flowed 175 barrels of distillate from Tuscaloosa when it quit drilling at 9000 feet. Gas-cut mud and salt water was recovered in upper Wilcox at 3500 feet. An edge test, 2000 feet east of Community 1, E. C. Johnston's Brown 1, E½ irregular 4-9n-10e, defined Wilcox production at Lake St. John when it tested dry in that horizon at 5050 feet. It plugged back, however, to complete as a gasser from Sparta at 2170-80 feet.

Catahoula Parish: On the Harrisonburg structure and 12 miles west of Lake St. John production, The California Company is drilling Eckhardt 1, NE NE 12-9n-7e. It will explore Sparta, which produces 19-gravity oil at 1810-18 feet at Manifest, and Wilcox found at approximately 3094 feet.

Bienville Parish: Four miles southeast of gas distillate production at Lucky, Placid Oil Company set pipe at 8113 feet at Southern Advance 1, SW NE 16-15n-6w, to test a distillate show. The discovery at Lucky was bottomed at 6900 feet. Operators perforated pipe and used acid in Pettit lime at 6836-64 feet. It flowed 24 million cubic feet of gas a day. Gas-oil ratio was from 5 to 7 barrels per million cubic feet.

California

Fresno County Field Opened—120-Barrel Well

California's second new field discovery of 1943 was made this week when Superior Oil Company's Fresno County wildcat, Kreyenhagen 81-22, NE NE NE 22-17-18 was completed with an initial flow of 120 barrels of 40-gravity clean oil daily through ¼-inch orifice from a production interval of only 7 feet in the Miocene. This well opens a new field five miles southeast of nearest production which is in the Helm field. Importance of the discovery cannot be evaluated until further wells have been drilled because it is characteristic of finds in that part of Fresno County that the values in the lenticular sands that carry the oil vary greatly even at short distances. Superior Oil Company holds large acreage about the well and it is in the heart of a district in which General Petroleum Corporation and Amerada Petroleum Corporation have leased several hundred thousand acres.

Los Angeles County: General Petroleum Corporation's new exploration venture in the Rice Canyon area, north of

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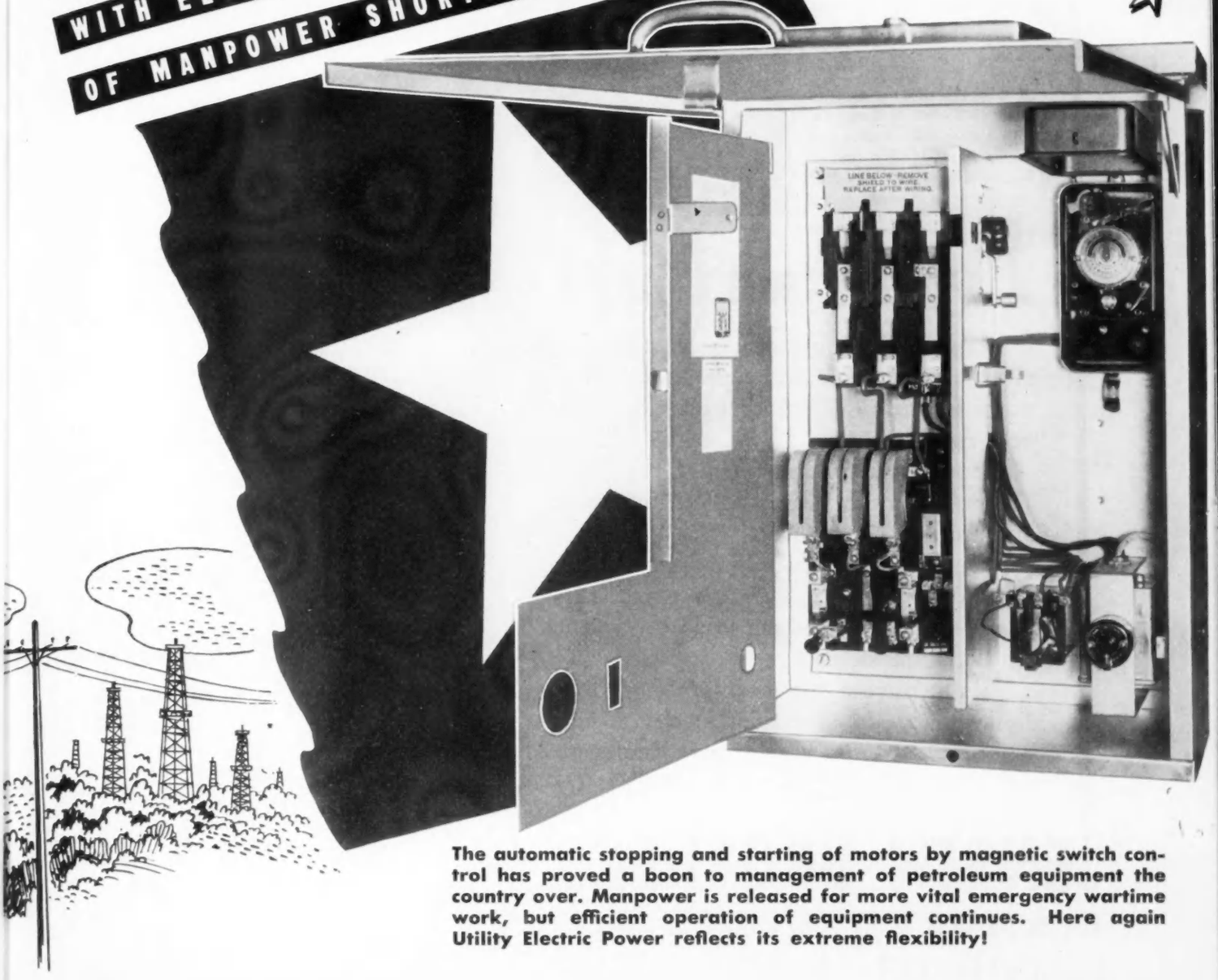

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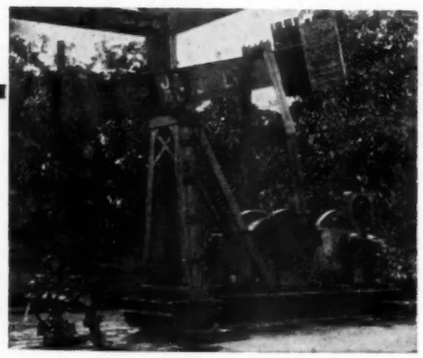
Aliso Canyon field, will test indications long considered promising. Its first wildcat, Mendota 1, NW 22-3-16, is in the middle of a sizeable block of leases. Others participating in the play include Standard Oil Company, Tide Water Associated Oil Company, Union Oil Company, Republic Petroleum Company, and Universal Consolidated Oil Company.

D. W. Elliott's Townsend Land Co. 1, 20-6-10, after unsatisfactory completion attempts at 2366 feet was deepened to 2424 feet, then plugged back to 2408 feet and was brought in on the pump from the bottom 100 feet of formation. It made production immediately but soon sanded up, and had to be bailed. In spite of the difficulties being experienced in finishing the well, belief is general that a discovery of considerable value in this area finally will be confirmed.

Sacramento County: Richfield Oil Company's Natomas 2, 28-10-4, was halted at 3746 feet and a final study of showings was followed by official announcement the well would be abandoned.

San Joaquin County: Amerada Petroleum Corporation is aggressively following up its discovery of a gas field near Lodi, reaching out widely to test surrounding properties. Work was started this week on a location for a new wildcat, Community 1, SW SW SW 10-4-7.

WALTER CRANDALL, formerly of Oklahoma City, is now division engineer for Sinclair Prairie Oil Company at Tulsa. He was succeeded by V. B. Bottoms.



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Michigan

Spacing Modification Encourages Wildcatting

Approval of 20-acre unit drilling in 12 counties comprising the Southwestern district of Michigan by PAW is expected to stimulate both wildcatting and bring some additional follow-up work in pools where wells have been drilled on the 40-acre basis. The order gives a maximum of 2000 feet which easily clears the Traverse lime horizon, only zone that has produced so far in that part of the state on a large and uniform scale. The best production has ranged at 1600 feet in Allegan County and 1200 feet in Van Buren County.

Many of the shallow pools are small, running from 150 to 350 acres, and operators for the most part have hesitated to participate in wildcat work with the 40-acre unit limitation. Prior to M-68 all of the shallow fields were drilled on 10-acre units with a single exception where 20-acre units were drilled. Of the 58 wildcat completions in Michigan this year only 19 were in the shallow area. Last year 83 were drilled in the district and 241 in 1940.

Missaukee County: Rated a 500-barrel producer natural from Dundee dolomite at 3840 feet, Gulf Refining Company's Bunning 3, C NW NE 35-22n-6w, offers Aetna-Prosper field expansion to the southeast and may revive development in the play. Either by outright failures or structure dips the pool appears to be defined except to the southeast.

Roscommon County: Gulf Refining Company set 5-inch casing at 4160 feet on State R-1, S½ SE NW 13-24n-1w, with a show of gas at that point, preliminary to testing Richfield dolomite horizon. Test is four miles northeast of Richfield pool.

Well Allowables: State well allowables will be reduced June 1 in both the Reed City and Headquarters fields, source of 55 percent of the state's production today. New allowables will cut 40-acre unit wells from 262½ to 218½ barrels per day and 20-acre units from 150 to 125 barrels per day.

Michigan averaged just over 59,000 barrels per day in April with Reed City producing 24,400 barrels per day and Headquarters averaging 6600 barrels per day. The new schedule will reduce runs from the two fields about 4400 barrels per day. It was the first change in the state allowables for the two fields since July 1, 1942.

Besides cutting the two biggest producers in the state the Aetna-Prosper field was ordered on a 262½-barrel-per-well basis for 40-acre unit wells.

HAROLD McCLURE of Alma was re-elected chairman of the Michigan oil advisory board, at the annual organization meeting. McClure has served as chairman of the board since its organization in 1939. T. R. Bowler of Clare, attorney for Sun Oil Company, was named a member of the board, to succeed Kurt H. deCousser of Lansing, Socony Vacuum Oil Company, whose term expired May 15. deCousser was one of the six original members of the oil board. The commission reappointed James C. Graves of Saginaw for a new term.

United States Well Completions

ARKANSAS

Nevada County—Stephens-Smart: McAlester Fuel Oil Co.'s Williams A-1, se se 2-15s-20w, perf Tokio 2502-35 ft, flow 59 bbls hr, td 3333 ft.

R. H. Crow, Tr.'s Weaver A-1, sw sw sw 2-15s-20w, abnd 2583 ft.

ARKANSAS WILDCATS

Calhoun County—Failure: Placid's Freeman Smith 5, nw se 14-16s-13w, abnd 5082 ft.

Placid's Freeman Smith 6, se sw 11-15s-14w, abnd 4590 ft.

Placid's Southern 2, sw sw 35-15s-14w, abnd 2564 ft.

Miller County—Failure: Magnolia's Olivet A-9, ne ne 4-16s-26w, abnd 7906 ft.

CALIFORNIA

Fresno County—Coalinga Old Field: Shell's 137-29, nw se sw 29-19-15, pump 130 bbls, 109 ft perf 2070 ft, td 2072 ft.

Fresno County—Riverdale: Amerada's Mathias 38-15, sw se sw 15-17-19, flow 542 bbls 37.4-gr, 158,000 gas, 9/64-in, 1150/640 lbs, perf 6805-6815 ft, td 6900 ft.

Kern County—Belridge South: Belridge Oil Co.'s 57A-34, nw sw se 34-28-21, pump 31 bbls 19.4-gr oil, 12 water, 329 ft perf 793 ft, completed 460 ft, td 793 ft.

Belridge's 67A-34, ne sw se 34-28-21, pump 44 bbls 14-gr oil, 16 water, perf 416-785 ft, completed 412 ft, td 785 ft.

Belridge's 11-2, nw sw nw 11-29-21, pump 4 bbls 14-gr oil, 6 water, perf 416-785 ft, completed 412 ft, td 785 ft.

General Petroleum Corp.'s Belridge 84-2, ne nw se 2-29-21, pump 55 bbls 13.3-gr, perf 563-668, 695-755, 870-899 ft, td 1000 ft, pd 889 ft.

General's Belridge 41-11, ne se ne 11-29-21, pump 57 bbls 16.2-gr, perf 848-936, 981-1049 ft, td 1080 ft.

Shell's TWA 1, se sw sw 1-29-21, pump 150 bbls, perf 973-930, 895-800 ft, td 1130 ft, pd 975 ft.

Kern County—Buena Vista Hills: Standard's 73-11D, c nw 11-32-24, pump 48 bbls 27.5-gr, 68 ft perf 2718 ft, completed 2645 ft, td 2720 ft.

Kern County — Fruitvale: Western Gulf's Red Ribbon 18, ne ne sw 27-29-27, flow 25 bbls, perf 4230-4270, 4180-4190, 4050-4120, 4010-4030, 3950-60, 3860-3930, 3795-3825, 3700-3730 ft, td 4360 ft.

Kern County—Kern Front: Standard's 45, nw ne se 11-28-27, pump 16 bbls 12.9-gr oil, 1 water, 238 ft perf 2270 ft, td 2272 ft.

Kern County — Midway-Sunset: Chanslor Canfield Midway Oil Co.'s 91-8, ne ne se 8-32-23, pump 7 bbls 13-gr, perf 1495-1405, 1190-1130, 1115-1105 ft, td 1510 ft.

Richfield's United 28, nw ne se 20-31-23, abnd 3200 ft.

Vedder Petroleum Corp.'s 5, nw se se 9-31-22, abnd 1230 ft.

Union's Midway-Northern 5, se nw nw 7-11-23, pump 78 bbls 12.8-gr oil, 46 water, 124 ft perf 1900 ft, td 2777 ft.

Kern County—Poso Creek-Premier: Standard's 5-25, ne se se 5-28-27 pump 213 bbls 11.8-gr, 175 ft perf 2775 ft, td 2777 ft.

Kern County—Strand, East: Tide Water Associated's 76-8, sw ne se 8-30-26, flow 128 bbls 32-gr, 2/16-in, 150/1150 lbs, 50 ft perf 8212 ft, td 8370 ft.

Los Angeles County—Brea-Olinda: Union's Stearns 77, 580 ft n 1564 ft w sec lease, pump 97 bbls 22.8-gr, td 4100 ft, pd 3343 ft.

Los Angeles County—Torrance: Texas Co.'s Oakley 8, 551 ft ely on c/l Lomita Blvd fr c/l Dodge Ave thence 1136 ely at r/a, pump 148 bbls, 135 ft perf 3665 ft, td 3665 ft.

Los Angeles County—Wilmington (Old Well Deepened): General Petroleum Corp.'s Terminal 9, 4748 ft sly along c/l Ford Blvd fr c/l Anaheim Blvd, thence 1448 ft wly at 90 degress, pump 54 bbls 14-gr 53 bbls water, perf 2570-2980, 3025-3439 ft, old depth 3015 ft deepened to 3590 ft.

Long Beach Oil Development Co.'s Z-1-2-Z, 123 nely along n/l Seaside fr w side Pico thence 787 ft sely at r/a, 2-5-13, pump 103 bbls 18.6-gr, 400 ft perf 2855 ft, td 2857 ft.

Orange County—Coyote, West: Standard's Murphy-Coyote 132, se sw se 17-3-11, pump 902 bbls 31.8-gr, 32/64-in, 225/0 lbs, 374 ft perf 6113 ft, td 6115 ft.

Orange County—Huntington Beach: Dunlap Trust No. 2's HB 3, 344 ft s 170 ft e sec Garfield and Huntington Beach Blvd, pump, no est, 40 ft perf 3696 ft, oil sand 3655 ft, td 3696 ft.

J. H. Marion's Blee 1, 150 s 150 w nec lot 5, blk 6, tract 7, pump 70 bbls 18-gr, 38 ft, perf 4070 ft, td 4070 ft.

Signal Oil & Gas Co.'s Bolsa 42A, 2011 ft n 1760 ft w swc Standard's Bolsa "C" lease, flow by heads, no est, td 4590 ft.

CALIFORNIA WILDCATS

Kings County—Failure: Shell's T.S.G. 21-28, sw nw nw 28-22-20, Tulaire Lake area, hard silt, abnd 12,491 ft.

Kern County—Failure: Roscoe F. Oakes et al's USL 1, ne ne nw 30-32-24, Midway Sunset area, oil sand 2428-2435, 2498-2510 (Calitroleum), abnd 3100 ft.

San Joaquin County—Failure: Bankline Oil Co.'s Comm. 3-1, sw nw se 4-4-7, Lodi area, abnd 3638 ft.

Ventura County—Failure: Tide Water Associated's Hidden 2, ne se 5-4-18, Piru area, faint oil and gas shows 6224-6302 ft, went through Miocene into younger beds, abnd hard gray sand and shale 8248 ft.

ILLINOIS

Clay County: W. C. McBride's Armstrong 2, se nw nw 10-3n-7e, Cyp 2601-18 ft, 16 bbls, 2625 ft.

Carter's Vangeison 2, ne ne se 15-5n-5e, Weiler 2131-34 ft, Ben 2286-2300 ft, Aux V 2334-55 ft, 213 bbls, 2355 ft.

Shell's Burmon 1, nw nw sw 15-5n-5e, abnd 2406 ft.

Texas Co.'s Kurkman-Kidwell 1, ne sw nw 15-5n-5e, Ben 2288-98 ft, Aux V 2344-55 ft, 80 bbls, 2356 ft.

Texas Co.'s Bloemker-Webster 2, se nw sw 3-5n-7e, Weiler 2523-34 ft, 87 bbls, 2534 ft.

Effingham County: K. Benson's Wright 2, se nw se 27-6n-5e, Ben 2277-93 ft, Aux V 2339-52 ft, 125 bbls, 2355 ft.

C. W. Crump's Habbe 1, se se sw 33-6n-7e, Weiler 2510-30 ft, 131 bbls, 2530 ft.

Franklin County: E. S. Adkins' Orient Coal D-2, ne se se 13-7s-2e, abnd 2996 ft.

Gallatin County: Carter's Crawford 4, sw se ne 11-8s-10e, Tar Spgs 2049-65 ft, 73 bbls, 2066 ft.

Hamilton County: Texas Co.'s Johnson 1, nw se sw 26-6s-6e, abnd 3110 ft.

J. W. Menhall's Hammond 1, nw nw nw 20-6s-7e, abnd 3066 ft.

Jefferson County: E. Wix's E. Nelson 1, c sw nw 36-2s-4e, McC lm 3051-56 ft, 123 bbls, 3056 ft.

Lewis Production Co.'s State Game Farm 2, sw se ne 28-3s-3e, abnd 2757 ft.

Texas Co.'s Wilkerson Comm 1, sw ne se 28-3s-3e, Aux V 2743-51 ft, L O'Hara 2765-76 ft, 14 bbls, 2776 ft.

Nash Redwine's Storey 2, ne se sw 34-3s-3e, Aux V 2708-26 ft, 404 bbls, 2726 ft.

Lawrence County: L. S. Heath's Bye 2, ne ne se 27-2n-12w, Biehl 1347-85 ft, 125 bbls, 1387 ft.

Madison County: Shell's Fairies 2, sw ne ne 34-3n-6w, Trenton lm 2299-2303 ft, 45 bbls, 2325 ft.

Marion County: Algona Oil Co.'s Stater 1, ne se nw 16-1n-1e, abnd 1995 ft.

Richland County: Pure's Myers 1, c se nw 31-3n-9e, abnd 3173 ft.

Wabash County: R. S. Young's Hershey 1, c nl ne nw se 34-2n-12w, abnd 2050 ft.

Wright Oil Co.'s M. Hershey 2, nw nw ne 34-2n-12w, Ben 2004-12 ft, 50 bbls, 2013 ft.

Wayne County: Pure's Clutter Cons 1, se nw sw 2-1n-7e, Rosi 3027-32 ft, McCl lime 3099-3101 ft, 80 bbls, 3130 ft.

Carter's Goff 1, c ne sw nw 17-1s-6e, Aux V 3034-48 ft, 123 bbls, 3049 ft.

Pure's Barnard 2, ne se nw 17-1s-6e, Aux V 2776-95 ft, 30 bbls, 3034 ft.

Southern Oper Co.'s Anderson 2, c n½ nw nw 2-1s-8e, abnd 2996 ft.

ILLINOIS WELLS DEEPENED

Edwards County: Case Pomeroy Oil Co.'s Helm 5, nw se ne 27-3s-14w, otd 2590 ft, Aux V 2776-95 ft, L. Weiler 2560-89 ft, 45 bbls, 2816 ft.

Wayne County: Braun et al's Bailey 1, n½ ne se 26-1n-6e, otd 3068 ft, L O'Hara 3128-38 ft, 240 bbls, 3138 ft.

ILLINOIS WILDCATS

Clay County—Failure: Northern Ordnance's Sapp 1, sw se 5-2n-5e, abnd 4968 ft.

Fayette County—Failure: B. M. Heath's Glusenkamp 1, se se se 26-6n-3e, abnd 2230 ft.

Franklin County—Failure: Kingwood et al's Valier Coal Co. 1, ne ne se 17-6s-2e, abnd 2870 ft.

Jefferson County — Discovery: Seaboard's Eldridge Comm 1, ne se ne 3-4s-3e, Rosi 2900-07 ft, 53 bbls, 2907 ft.

Wabash County—Discovery: Superior's Veikman 1, c wl nw sw nw 9-1s-12w, Biehl 1498-1520 ft, Ben 2163-91 ft, 126 bbls, 2403 ft.

White County—Failure: R. W. Sleymaker's Ackerman 1, nw nw ne 21-5s-10e, abnd 3237 feet.

INDIANA WILDCATS

Adams County—Failure: R. O. McKee's Glendenning 1, se se ne 35-25n-13e, abnd 2330 ft.

Jasper County—Failure: W. D. Farley's Fenwick 1, c w½ w½ 29-28n-7w, abnd 400 ft.

Jefferson County—Failure: E. T. Hart's C. Hammond 1, nw nw ne 35-4n-7e, abnd 1552 ft.

Gibson County—Discovery: Chester Oil Co.'s

Wells Completed in the United States in Week Ended May 29, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama														3
Arkansas	1			1	2				4	4	6	3	84	87
California	22			2	24	1			4	4	29	30	577	337
Colorado													8	4
Georgia														2
Illinois	16			9	25	2	2		4	6	33	29	778	787
Indiana							1		4	5	5	3	109	166
Kansas	14		1	9	24		3		13	16	40	37	661	653
Kentucky									2	2	2	11	116	61
Louisiana	6	2		4	12		1			1	13	20	240	446
North Louisiana	2	2		1	5		1			1	6	13	104	
South Louisiana	4			3	7						7	7	136	
Michigan	3			4	7		1		2	3	10	7	191	277
Mississippi												1	12	58
Missouri													3	15
Montana													58	67
Nebraska														24
New Mexico	5				5			1	1	2	7	4	107	179
New York	16		7		23						23	25	465	485
Ohio	3	7		5	15						15	9	343	455
Oklahoma	7	1	1	2	11	3	1		5	6	20	22	547	653
Pennsylvania	33	3	17		53						53	54	1,106	1,677
Tennessee													1	6
Texas	32	3		21	56	2	7	1	18	26	84	75	1,568	2,801
E. T. Bor. Co's.													7	
E. Texas Field													2	
Rest of E. Texas	2	1		3	6				1	1	7	1	91	
North Texas	6			4	10		1		7	8	18	20	361	
W. Cen. Texas	3	1		2	6		2		1	3	9	6	134	
West Texas	10			2	12	2	1		3	4	18	20	367	
Tex. Panhandle	2	1			3						3	5	89	
G. Coast, Upper	4			3	7						7	8	110	
G. Coast, Lower	3			6	9		2	1	1	4	13	11	233	
S. West Texas	2			1	3		1		5	6	9	4	146	
S. Central Texas													28	
West Virginia	4	6		4	14						14	9	240	295
Wyoming													40	33
Total U. S.	162	22	26	61	271	8	16	2	57	75	354	339	7,254	9,571

* Includes distillate wells. † Includes salt water disposal wells.

Shoultz 1, sw sw sw 16-1s-9w, Hds 1284-89 ft, 35 bbls, 1289 ft.

Porter County—Failure: Tri-State Syndicate's E. Anderson 1, ne nw se 3-36n-5w, abnd 1125 ft.

KANSAS

Barton County—Kraft-Prusa: Sinclair Prairie et al's Seyfert A-7, ne sw ne 29-16s-11w, Arb 3306 ft, 5000 gals acid, pump 82 bbls, 3312 ft.

Black-Marshall's Hitschman 2, ne sw sw 32-16s-11w, Arb 3428 ft, abnd 3437 ft.

Phil-Han's Kirmer 2, ne ne nw 8-17s-11w, Arb 3357 ft, abnd 3366 ft.

Barton County—Silica: J. H. Hersey's Roth 3, c n½ sw ne 25-19s-11w, Arb 3302 ft, 6000 gals acid, pump 433 bbls, 3327 ft.

Butler County—Keighly: Phillips' Keighly Unit 28, c ne se 22-27s-7e, Arb 3189 ft, 610 gals acid, abnd 3203 ft.

Chase County—Pixlee: John W. Drisson et al's Evans 1-A, c ne ne 12-22s-9e, Miss lm 2396 ft, abnd 2455 ft.

Cowley County — Smith-Shaffer: Sunray's Wert 1, nw ne se 15-31s-3e, Arb 3405 ft abnd 3421 ft.

Cowley County—Henderson: Earl Wakefield's Campbell 2, c nw se 22-32s-3e, Kansas City lm, 2590-2600 ft, pump 30 bbls, 3463 ft.

Greenwood County—Quincy: Bisagno's Steckel 1, c n½ nw nw 6-25s-13e, Miss 1697 ft, abnd 1759 ft.

Marion County—Lost Springs: Alma Oil Co.'s Dunlap 1, c w½ sw se 23-17s-4e, Chat 2331 ft, pump 250 bbls, 2378 ft.

McPherson County—Sw Lindsborg: Auto Ordnance's Bengstrom 7, c w½ se se 25-17s-4w, Viola 3377 ft, 1800 gals acid, pump 75 bbls, 3398 ft.

Pratt County—Carmi: Champlin's Stueder 2, sw ne sw 29-26s-12w, Arb 4271 ft, 2000 gals acid, pot 3000 bbls, 4308 ft.

Shell's Miskimen 2, sw ne ne 32-26s-12w, Arb 4252 ft, 1500 gals acid, est pot 3000 bbls, 4301 ft.

Pratt County—N. Iuka: Hollow Drlg. Co.'s Harrel 2, sw ne ne 36-26s-13w, Arb 4305 ft, 1000 gals acid, pot 3000 bbls, 4329 ft.

Reno County—Zenith: Skelly's Johnson 2, c nw ne 6-24s-10w, Viola 3690 ft, 2000 gals acid, flow 496 bbls in 9 hrs, 3726 ft.

Rooks County—Laton: Cities Service's Hodson 1, c s½ se nw 34-8s-16w, K C lm 3042 ft, 8000 gals acid, pump 218 bbls, 3042 ft.

Rush County—Otis-Albert: Morgan, Flynn & Cobb's Otis 4, c w½ ne se 23-18s-16w, Lans lm 3228-34 ft, pump 138 bbls, 3558 ft.

Russell County—N. Russell: Aylward and Skelly's Ehrlich 1, c nw sw 15-13s-14w, Arb 3282 ft, 1000 gals acid, abnd 3305 ft.

Russell County—Greenvale: Stanolind's Major 3, c s½ ne ne 4-15s-12w, Lans 2905 ft, 8500 gals acid, pump 450 bbls, 3210 ft.

Russell County—Forrest Hill: Lauch & Moncrief and Sunray's Weber 1, c n½ sw nw 28-15s-12w, Arb 3327 ft, abnd 3352 ft.

Eldorado Refining Co.'s Steinlie 2, c n½ se ne 29-15s-12w, Arb 3336 ft, 500 gals acid, pump 342 bbls, 3346 ft.

Russell County — Trapp: Cities Service's Michael 1, c s½ sw sw 3-15s-13w, Arb 3302 ft, abnd 3325 ft.

Sedgwick County—Greenwich: Shell's Brown 1, se se sw 15-26s-2e, Arb 3356 ft, input well, 3806 ft.

Stafford County—Drach: Phillips' Hitz 1, c se nw 7-22s-12w, Arb 3672 ft, 1500 gals acid, pump 198 bbls in 11½ hrs, 3689 ft.

KANSAS WILDCATS

Barber County—Discovery: Champlin Rfg. Co.'s Allen 1, se nw se 22-32s-15w, Viola lm 4945-5012 ft, temp pot flow 2785 bbls, grav 28.7, 5012 ft.

Barton County—Failure: Spencer & Carlson's Presser 1, swc 10-17s-12w, Topeka 2660 ft, Arb 3338 ft, abnd 3347 ft.

Branine & Goering's Purcell 1, nwc se 20-20s-13w, Arb 3600 ft, abnd 3651 ft.

Edwards County—Failure: Broderick & Gordon's Smith 1, c ne se 17-24s-20w, Miss 4780 ft, Arb 5066 ft, abnd 5110 ft.

Ellis County—Failure: Cities Service's Scheck 1, nwc se 30-12s-16w, KC 3603 ft, Arb 3700 ft, abnd 3730 ft.

Harvey County—Failure: Falcon - Seaboard and Drillers Gas Co.'s Neufeldt 1, c nw se 15-22s-3w, Lans 2475 ft, Viola 3695 ft, Arb 3800 ft, abnd 3820 ft.

Marion County—Failure: Westgate-Greenland's Unruh 1, se ne ne 9-19s-1e, Lans 2240 ft, Kinderhook 3040 ft, abnd 3380 ft.

McPherson County—Failure: Nadel & Gussman's Morrison 1, c s½ sw sw 13-17s-1w, Miss 2798 ft, abnd 2828 ft.

D. J. Marshall et al's Eash 1, swc 3-20s-5w, Miss 3439 ft, abnd 3468 ft.

Pawnee County—Failure: Vickers' Ashworth 1, c n½ ne nw 17-22s-15w, Lans 3496 ft, Arb 3978 ft, abnd 4028 ft.

Pratt County—Failure: Hollow Drlg. Co. and N. Appleman's Thompson 1, sw nw nw 19-26s-12w, Arb 4459 ft, abnd 4509 ft.

Superior of Calif.'s Hoover Est. 1, nec 24-26s-12w, Lans 3622 ft, Viola 4243 ft, Arb 4433 ft, abnd 4476 ft.

Pratt County—Discovery: Stanolind's Frisbie 1, c se sw 5-26s-13w, Lans lm 3755 ft, perf csg 3947-55 ft, 6500 gals acid, est pot 3000 bbls, grav 32.7, 4455 ft.

Saline County — Failure: Falcon-Seaboard and Phillips' Morris 1, c w½ se se 33-16s-3w, Simp dolo 3444 ft, Arb 3525 ft, abnd 3555 ft.

Stafford County—Discovery: Stanolind and Derby's Van Lieu 1, ne se ne 20-24s-13w, Arb 4068-84 ft, pump 942 bbls and show wtr, grav. 36, 4084 ft.

Stafford County—Failure: Zephyr Drlg Co.'s Knop 1, nwc 9-25s-11w, Viola 3900 ft, Arb 4085 ft, abnd 4118 ft.

KENTUCKY WILDCATS

Henderson County — Failure: Nash Redwine's Royster 1, 12-O-22, abnd 2655 ft.

Creekmore & Rooney's Priest 1, 16-P-26, abnd 2383 ft.

NORTH LOUISIANA

Claiborne Parish — Haynesville: Midstates Oil Co.'s Wallas 7, ne nw 3-23n-8w, flow 20 bbls hr, 20/64-in, perf Pettit 5370-82, td 5450 ft.

Midstates-Skelly Oil Co.'s Sherman 1, ne ne 2-23n-8w, flow 696 bbls, 24/64-in, tp 275, cp 750, gor 425-1, gr 40.4, 5392 ft.

DeSoto Parish—Logansport: Southern Production Co.'s Frost 2, ne sw ne 7-11n-15w, 46,000,000 gas, spray dist, perf 4894-4934, rp 2260, td 4961 ft.

Winn Parish—Calvin: Mansfield's Fee 1, sw se 8-12n-4w, abnd 6328 ft.

Tensas Parish—Discovery: California-Carter's Rhodes 2, nw irreg 28-9n-10e, perf Wilcox 4435-43, flow 187 bbls, 3/16-in, tp 350, cp 500, gor 500-1, td 6017 ft.

Union Parish—Monroe: J. E. Farrell Co.'s Union-Steele 6, 39-20n-3e, 4,147,000 gas, rp 805, td 2120 ft.

SOUTH LOUISIANA

Cameron Parish—West Hackberry: Stanolind's Hebert 1, 1650 ft e, 330 ft s nwc 33-12s-10w, abnd 9710 ft.

Iberia Parish — Avery Island: Humble's Petit Anse 4, 25-13s-5e, 5½-in 9050 ft, perf 8970-85 ft, flow 208 bbls ¼-in, td 9050 ft.

Jefferson Parish—Bay de Chene: Texas Co.'s LaFourche Basin 4-A, n 76 deg 16 mins e 11,324 ft fr USCGS Mon "Hackberry" in 34-19s-24e, abnd 9701 ft.

St. Charles Parish—Bayou des Allemands: Amerada and Stanolind's Sellers 2, 1788 ft s, 4215 ft e nwc 14-15s-20e, 5½-in 10,054 ft, perf 9980-89 ft, flow 170 bbls, ¼-in, td 10,593 ft.

St. Landry Parish — Port Barre: William Helis' Futral-McDonald 2, 5506 ft n 7 deg 30 mins e, 2529 ft s 81 deg 30 mins e to lcn fr swc 2-6s-6e, 5½-in 7140 ft, perf 6785-6800 ft, flow 90 bbls 3/32-in, td 7394 ft.

St. Mary Parish—Cote Blanche: Texas Co.'s State-Cote Blanche Bay Island 4, 6450 ft s USCGS "Bluff" in T-15s-7e, abnd 8540 ft.

St. Mary Parish—Bayou Sale: Texas Co.'s State-East Cote Blanche Bay 3, s 31 deg 29 mins w 8188 ft fr USCGS Mon South Bend in Bay T-16s-9e, set 7-in 10,165 ft, perf 10,112-35 ft, flow 284 bbls 9/64-in, td 10,165 ft.

MICHIGAN

Allegan County—Otsego: R. B. Patrick's Stone 1, c sw ne 30-1n-12w, drilled Traverse, abnd 1460 ft.

Gladwin County—Bentley: Mammoth Producing Co.'s Snellenberger 1, c sw sw 16-17n-2e, Dundee 3445-70 ft, pump 16 bbls, td 3570 ft.

Missaukee County — Aetna-Prosper: Gulf's Bunning 3, c nw ne 35-22n-6w, Dundee 3839-40 ft, flow 492 bbls, td 3940 ft.

Osceola County—Cedar: Sun's Zimmerman 1, s½ sw nw 27-18n-9w, Dundee 3808-09 ft, flow 162 bbls, td 3809 ft.

Osceola County—Evart: Sun's Headley 1, n½ ne sw 28-18n-8w, Dundee 3763 ft, water 3766 ft, abnd 3767 ft.

Ottawa County — New Holland: Earl G. Hartman's Hockema 1, se sw ne 35-5n-15w, abnd 1500 ft.

Socony Vacuum's DeVries 1, c ne nw 36-5n-15w, abnd 1471 ft.

MICHIGAN WILDCATS

Allegan County—Failure: Columbia Oil & Gas Co.'s Weber 1, se nw se 18-2n-12w, Traverse 1529 ft, abnd 1604 ft.

Jetter & deKraft's Selkirk 1, ne nw se 29-3n-11w, Traverse 1851 ft, abnd 1874 ft.

Newaygo County—Woodville Field Discovery: Ohio Oil Co.'s Vaughan 1, s½ ne ne 29-15n-11w, elev 1052 ft, Stray 1140 ft, Traverse 2800 ft, pay 2805-20 ft, Dundee 3316 ft, Monroe 3382 ft, td 3534 ft, pb 2850 ft, perf 17 shots, acid 500 gals, flow 209 bbls, ¼-in.

NEW MEXICO

Eddy County: Aston & Fair's Stevens 2-B, c ne se 26-17s-30e, flow 405 bbls 2-in, shot 50 qts 3260-82 ft, td 3284 ft.

Nash-Windfohr-Brown's Jackson 7-B, c ne nw 25-17s-30e, flow 300 bbls 2-in, shot 220 qts 3190-3250 ft, td 3256 ft.

Skelly's Dow 4-B, c sw nw 21-17s-31e, pump 30 bbls, shot 200 qts 3461-3557 ft, td 3571 ft.

Western Prod. Co.'s Burch 8-C, c se se

The OIL WEEKLY'S TRADING POST

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Regular classified advertisements for this special section, set in type this size without border, take flat rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 Houston, Texas

23-17s-29e, flow 160 bbls 2-in, acid 9000 gals 2805-2933 ft.

Lea County—Lynn: Repollo Oil Co.'s State 1-F-157, c ne ne 17-23s-36e, elev 3480 ft, flow 840 bbls 2-in, acid 1500 gals 3740-75 ft.

NEW MEXICO WILDCATS

Lea County—Failure: Culbertson & Irwin, Inc.'s Bowman-Texaco 1-N, c se se 26-19s-32e, anhydrite 1080 ft, salt 1225 ft, abnd 3118 ft.

San Juan County—Gas Discovery: Continental-Standard of Texas-Stanolind's Tocito 1, c nw sw 17-26n-18w, elev 5852 ft, 2,600,000 gas, carrying helium, acid 2000 gals Basal Pennsylvanian 6648-6700 ft, td in quartzite 6920 ft.

OKLAHOMA

Caddo County—Cement: Magnolia's Cement-Henely 5, ne sw se 35-6n-10w, Medrano 5390-5505 ft, flow 289 bbls 7 hrs, 1,536,000 ft gas 24 hrs, 5525 ft.

Creek County — Cushing: J. E. Crosbie's Jones 2, c nw sw 12-18n-7e, Skinner 2717 ft, shot 120 qts, flow 25 bbls, 2773 ft.

Grady County—Cement: Ohio's Laflin 1, c sw sw 7-5n-8w, 2nd oolitic 5045 ft, 40,175,760 ft gas, 6500 ft.

McClain County—Byars: Phillips' Underwood 1, c ne se 21-5n-3e, Viola 3553 ft, 1000 gals acid, flow 113 bbls, 3562 ft.

Okmulgee County—S. Beggs: Mueller et al's Pine 1-B, sw nw se 28-15n-12e, Wx 2737 ft, abnd 2762 ft.

Osage County—Burbank: Magnolia's De-Noya 6, sw ne sw 11-26n-6e, Bartles 2840 ft, shot 130 qts, pump 87 bbls, 2896 ft.

Pawnee County — Cleveland: Johnson O&R Co.'s School Land 1, ne nw sw 16-21n-8e, Cleveland 1640 ft, input well, 1741 ft.

Pottawatomie County—Lake Shawnee: Magnolia's Heller-Petro 1, nw sw se 28-10n-2e, Dense 5800 ft, abnd 5933 ft.

Seminole County — Sylvian: J. E. Hall's Tucker 1, nw nw sw 11-10n-7e, Cromwell 3659 ft, flow 105 bbls, 3672 ft.

Stephens County — Velma: Skelly's Doak Unit 1-1, sw ne nw 36-1s-5w, Hunton 4240 ft, 6000 gals acid, shot 380 qts, flow 19 bbls, 4889 ft.

Stephens County—W. Loco: J. E. Jackson's Lowery 2, sw se nw 8-3s-5w, sandy lime 1050-60 ft, 1500 gals acid, pump 50 bbls, 1078 ft.

OKLAHOMA WELLS DEEPENED

Marshall County — Isom Springs: Kelso's Felts 1, sw sw nw 6-8s-6e, otd 231 ft, sd 481-518 ft, abnd 518 ft.

Okfuskee County—Olympic: Sinclair Prairie's Phillips 1, ne se ne 24-10n-8e, otd 1886 ft, sd 1889-1904 ft, shot 30 qts, pump 5 bbls, 1904 ft.

Osage County—Unnamed: Cities Service's Osage 4-490, ne ne ne 30-26n-10e, otd 2112 ft, Arb 2378 ft, 1,500,000 ft gas, 2383 ft.

OKLAHOMA WILDCATS

Lincoln County — Failure: R. H. Lynn's Yonts 1, sw sw sw 8-15n-4e, perf 3841-3901 ft, abnd 4082 ft.

Osage County—Failure: Norbla & Peters' Osage 1, sw sw nw 7-26n-5e, Miss 3138 ft, abnd 3140 ft.

Pawnee County—Failure: Watchorn O&G Co.'s Harmon 1, c ne nw 29-23n-4e, Arb 4165 ft, abnd 4526 ft.

Pontotoc County—Failure: Blackwell O&G Co.'s Walters 1, nw nw se 19-4n-8e, Crom 2800 ft, abnd 2896 ft.

Pottawatomie County—Failure: Hall & Briscoe's Deiker 1, c sw sw 19-9n-2e, Wx 6174 ft, abnd 6232 ft.

Seminole County — Discovery: Kerlyn and Continental's Scott 1, ne sw sw 3-10n-7e, Hunton 4182 ft, pump 14 bbls oil, 135 wtr, 4188 ft.

NORTH TEXAS

Archer County: W. E. Prod. Co.'s Anderson 3, blk 8, Meade "LM" Pasture sur, abnd 1502 feet.

W. E. Prod. Co.'s Anderson 4, 694 ft snl and 629 ft wel blk 8, Meade "LM" Pasture sur, pump 12 bbls, sand 1456-64 ft.

Clay County — Watson: J. A. Chapman's Newton 3, 475 ft snl & 3700 ft wel Cobb sur, pump 12 bbls, acid 3000 gals, Bend perf 5220-5403 ft, td 5497 ft.

Cooke County—Bindel: The Texas Co.'s Zipperer 1, 330 ft nsl and 495 ft ewl H. Dixon sur A-335, elev 1147 ft, abnd in granite 3615 ft.

Grayson County: Burk Royalty Co.'s Freeman 2, 1650 ft ewl and 330 ft snl 148-ac lse, W. S. Reeves sur, abnd 1430 ft.

Jack County: Buttram Pet. Co.'s Cullers-Sporer 7, 990 ft snl & 2526 ft wel sec 2, S. F. L. W. sur A-2147, pump 19 bbls 2072-77 ft.

Montague County—Stoneburg: Continental's Winder 2, 330 ft wel and 467 ft nsl lse, sec 4, Limestone CSL, Bend 6040 ft, flow 213 bbls 20/64-in, natural, conglomerate 6247-54 ft.

Wilberger County—Fargo: W. H. Rogers, Jr., Tr.'s Green-Amerada 1, 440 ft out nec H&TC 32, blk 15, top Strawn 4498 ft, pump 196 bbls, acid 5000 gals 4505-93 ft.

Young County: Harper-Knappenberger et al's Smith 1, 1472 ft snl and 467 ft wel tract in s part TE&L 3407, abnd 3618 ft.

L. & W. Oil Co.'s King-Wooten 1, TE&L Co. sec 1977, flow 92 bbls oil, 35 water ½-in, acid 1000 gals perf 4174-92 ft, td 4243 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: L. T. Burns et al's Bishop 1, 467 ft out swc n-100-ac blk 52, Meade "L.M." Pasture sur, elev 1306 ft, Ellenburger 5304 ft, abnd 5315 ft.

Consolidated Oil Co.'s Henry 1, 330 ft out nec sec 35, blk 5, Clark-Plumb sur, abnd 925 ft.

Republic Natural Gas Co.-Seaboard's Powell 1, 330 ft out sec s-80 of 201½-ac tr, Wm. Henry sur A-163, abnd 1446 ft.

Avis B. Taylor et al's DeMoss 1, 1350 ft ewl and 1500 ft snl sec 2, C. A. Smith sur A-1219, abnd 1284 ft.

W. H. Peckham et al's Abercrombie 1, 990 ft snl and 1650 ft wel w-200-ac of s½ Wm. Cound sur A-789, abnd 1195 ft.

Jack County—Failure: Hanlon & Buchanan's Hensley 1-A, 1485 ft w and 495 ft n of nwc M. L. Franks sur, but in B. F. Terry sur, A-611, Ellenburger 5962 ft, abnd 6070 ft.

Montague County — Failure: Bridwell Oil Co.'s Gray 1, 330 ft ewl and 1700 ft snl L. Bennett sur A-50, abnd 2393 ft.

Wilbarger County—Oil Discovery: Rogers Bros. Dr. Co.'s McCrary 1, sw ne se H&TC 64, blk 14, pump-flow 100 bbls, sand 1494-99 feet.

EAST TEXAS

Anderson County—Cayuga: Shaw Oil Co.'s Royal & Cone 2, 467 ft out nwc 95-ac tr, Thos. Bristow sur, Woodbine 3944 ft, 85,000,000 gas, 875 lbs rp, sand 4004-34 ft, td 4067 ft.

Cherokee County—Rusk: L. O. McMillan et al's New Birmingham 1, 660 ft snl and 4100 wel Levi Jordan sur, elev 418 ft, abnd 5148 ft.

Wood County—Hawkins: Humble's Greines 1, 467 ft out swc 99.93-ac lse, T. S. McFarland sur, elev 402 ft, top Woodbine 4795 ft, abnd 4987 ft.

Wood County—Quitman: Amerada & Gulf's White 1, 660 ft out swc 255.31-ac lse, S. G. Purse sur, elev 444 ft, Georgetown 5068 ft, Goodland 6245 ft, Paluxy series 6319 ft, sand 6334 ft, water 6352 ft, abnd 6370 ft.

Shell's Blalock & Blalock 1, 275 ft ewl and 2000 ft nsl S. G. Purse sur, elev 475 ft, Paluxy 6246 ft, flow 672 bbls, ¼-in, perf 6252-6320 and 6336-48 ft, td 6455 ft.

Shell's Goldsmith 4, 1993 ft snl and 660 ft ewl W. W. Lanier sur, elev 436 ft, Georgetown 5080 ft, flow 97 bbls, ¼-in, Paluxy perf 6215-48 ft, td 6414 ft.

EAST TEXAS WILDCAT

Upshur County—Failure: H. H. Groneman et al's Johnson 1, 330 ft out swc 72-ac tr, Wm. Williams sur, elev 330 ft, abnd 3976 ft.

WEST CENTRAL TEXAS

Coleman County: Anzac Oil Corp. et al's Morris 40-J, 1980 ft from m/n/n and 330 ft from m/w/e lines E. H. Williams sur 2, elev 1616 ft, abnd 2615 ft.

Eastland County: Lone Star Prod. Co's Ward 4, 3934 ft snl and 3452 ft ewl J. B. Hoxie sur, elev 1417 ft, flow 45 bbls oil, 4,000,000 gas, 2-in, natural, Lake sand 3296-3328 ft.

Jones County—Wimberly: Butler-Horne Dr. Co.-R. L. Force's Horne 1, 330 ft out swc e-70 of 150-ac tr, G. Martinez sur 137, abnd 2251 ft.

Palo Pinto County: Palo Pinto O&G Corp.'s Martin 1, 330 ft out nwc s½ sec 66, Burleson CSL, leag 3, 3,500,000 gas, natural, 3319-21 ft.

Shackelford County: Roeser-Pendleton and Humble's Morris 10(54), 440 ft snl and 330 ft ewl se ET 205, pump 40 bbls, 1582-92 ft, td 1598 ft.

R. H. Roark et al's Nail 5, 1320 ft wel and 660 ft nsl ET 135, pump 11 bbls, sand 1524-37 ft, td 1589 ft, pb to 1541 ft.

WEST CENTRAL TEXAS WILDCATS

Comanche County—Failure: O. L. Johnson et al's Eanes 1, 330 ft out nwc 96 acres, John Marshall sur 7, abnd 610 ft.

Jones County—Oil Discovery: Fain-McGaha Unit Members' Patterson 1, nw nw ne T&P 20, blk 17, elev 1752 ft, pump 75 oil, 8 water, Tannehill sand 2202-06 ft.

WEST CENTRAL TEXAS NEW PAY

Jones County—South Noodle: R. H. Roark et al's Sears-Humble 1, 467 ft out nwc ne T&P 37, blk 18, elev 1811 ft, flow 253 bbls 42-gr, ¾-in, acid 1000 gals, Lower Hope 2725-38 ft.

WEST TEXAS

Andrews County—Embar-Ellenburger: Phillips' University-Andrews 38, c ne sw sec 30, blk 10, Ellen, 7718 ft, flow 1740 bbls, ½-in, acid 500 gals, perf 7910-44 ft, td 8005 ft.

Andrews County—Means: DeKalb Agricultural Assn.'s Shultz 1, 555 ft from swc nw PSL 5, blk C-45, pump 150 bbls, acid 7000 gals, perf 4400-23 ft, td 4569 ft.

Andrews County — West Fuhrman: Seaboard's Thornberry 5, c ne sw PSL 18, blk A-42, flow 441 bbls, ½-in, shot 870 qts 4240-4620 ft.

Cochran County—Slaughter: Devonian Oil Co. et al's Duggan 20-B, 510 ft out swc lab 21, leag 55, Oldham CSL, flow 1023 bbls, 2½-in, acid 12,000 gals 5002-55 ft.

Stanolind-Unit Members' Dean 4-A, 660 ft out nwc lab 22, leag 93, Mills CSL, flow 87 bbls, 1-in, acid 11,700 gals 4957-5050 ft, td 5070 ft, pb to 5050 ft.

Ector County — Goldsmith: Continental's T.P. Land Trust 2-B-31, ne nw ne T&P 31, blk 45, T-1-N, flow 216 bbls, ¼-in, acid 10,000 gals 4260-4310 ft.

Hockley County—Slaughter: T. F. Morrow et al's Mallet 33, 580 ft out swc lab 11, leag 48, Edwards CSL, flow 698 bbls cas, acid 12,000 gals 4912-57 ft.

Howard County—Iatan-East Howard: Sinclair Prairie's Davis 1, sw se sw T&P 44, blk 30, T-1-N, pump 493 bbls, lime 2520-36 ft.

Pecos County—Taylor-Link: Wm. Wolf et al's University 1-C, c nw ne sec 33, blk 16, elev 2537 ft, abnd 1528 ft.

Reagan County—Barnhart: Amerada's University 1-R-O, c nw nw sec 8, blk 48, elev 2750 ft, base shale 8970 ft, flow 1599 bbls, ½-in, acid 11,250 gals, Ellenburger perf 9000-30 and 9055-9136 ft, td 9189 ft.

Amerada's University 1-R-P, 707 ft nsl and 660 ft wel ne sec 5, blk 48, elev 2768 ft, base shale 9070 ft, flow 340 bbls oil, 250 water, ½-in, acid Ellenburger perf 7250 gals 9096-9131 and 9187-9228 ft, td 9380 ft.

Ward County—Estes: Westexas Oil & Roy. Corp.'s University 2-A, 990 ft nsl and 330 ft wel sec 3, blk 16, abnd 2709 ft.

WEST TEXAS WELLS DEEPENED

Upton County—McCamey: Humble's Ricker 13-B, 330 ft from ne and 4595 ft from se sec 6, blk R, Grooms sur, otd 2678 ft, pump 88 bbls oil, 1 water, acid 1000 gals 2645-2725 ft.

Humble's Ricker 20-B, 330 ft from ne and 5770 ft from se lines sec 6, otd 2680 ft, pump 84 bbls, acid 1000 gals 2670-2730 ft.

WEST TEXAS WILDCATS

Mitchell County — Failure: Cosden Pet. Corp.-W. D. Casebolt's Thompson-Smith 1, c

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ne ne T&P 53, blk 25, elev 2197 ft, 1st sul w 3900 ft, abnd 4000 ft.

Pecos County—Failure: Brown-Hancock Oil Co.'s McKay 1, 660 ft snl and 3300 ft wel I&GN 32, blk 1, elev 2146 ft, abnd 2501 ft.

Yoakum County—Failure: Humble's Tannehill 1, c sw ne sec 840, blk D, elev 3769 ft, Yates grains 3190 ft, brown lime 4210 ft, San Andrews 4710 ft, Glorietta 6280 ft, Clear Fork 6790 ft, abnd 7950 ft.

WEST TEXAS WILDCAT DEEPENED

Winkler County—Oil Discovery: Magnolia's Walton-State 20, c nw nw PSL 4, blk B-3, otd 8445 ft, elev 2934 ft, Permian-Devonian contact 7620 ft, Silurian 8800 ft, Montoya 9105 ft, Simpson 9460 ft, Tulip 9720 ft, McKee 9920 ft, Waddell 10,213 ft, Ellenburger 10,460 ft, flow 589 bbls 41.7-gr sweet oil plus 2% fresh water, gas-oil ratio 1744/1, ¼-in choke natural, perf 10,763-10,705 ft, td in water 10,774 ft.

TEXAS PANHANDLE

Carson County: Cities Service's Whittemore 2, 660 ft snl and 1950 ft ewl I&GN 14, blk 7, pump 72 bbls, granite-wash 3161-94 ft.

Gray County: Phillips' Davidson-Hope 2, c ne ne H&GN 87, blk B-2, pump 137 bbls, shot 180 qts 2895-2950 ft, td 2956 ft.

Hutchinson County: Panhandle Producing Co.'s Herring-Texaco 4-B, 2000 ft nsl and 1238 ft ewl R. Walters sur, 21,000,000 gas, 300 lbs rp, 3120-35 ft.

TEXAS GULF COAST

Fort Bend County—Clodine: Houston Oil Co.'s Thompson 6, 467 ft fr n&el H. D. Brown sur, 385-ac tr, 5½-in 7513 ft, perf 7500-01 ft, flow 157 bbls, ⅛-in, td 7527 ft.

Matagorda County—North Markham: Ohio Oil Co.'s Carlson 18, 510 ft fr nw&nel 160-ac part 2779-ac lse, I&GN 10, 5½-in 8263 ft, perf 7715-18 ft, flow 223 bbls, ⅛-in, td 9009 ft.

Polk County—Livingston: Gem Oil Co.'s Duff & Kimes 1, 467 ft fr swl & 515 ft fr nw&sel of unit, A. Viesca 7-League gr, abnd 7140 ft.

Matagorda County—South Buckeye: United North and South's Stoddard 9, 1718 ft w of wl of R. A. Kendt lse, 1300 ft sse of most s'ly se cor L. L. Lambert 645-ac lse, abnd 9311 ft.

San Jacinto County—Mercy: Shell's Foster 7, 1236 ft se'ly fr Foster 4 well, 5672-ac lse, William Dobie sur, A-93, 5½-in 8266 ft, sand 8267 ft, flow 157 bbls, ⅛-in, open hole 8266-89 ft, td 8289 ft.

Waller County—Katy: Humble's American Rice Milling 1-D, 660 ft fr n&wl sec 81, 800-ac tr, abnd 7925 ft.

Humble's Hebert 1, 1980 ft fr el & 660 ft fr nl sec 113, H&TC sur, A-173, 5½-in 7171 ft, perf 6855-59 ft, flow 102 bbls, ¼-in, td 7179 ft.

LOWER TEXAS COAST

Bee County—Caesar: Dirks Bros.' Miller 1, 495 ft fr s'ly nel, 1495 ft fr s'ly sel of 404-ac tr, Franklin Lewis sur, abnd 6523 ft.

DeWitt County—Thomaston: Atlantic's Brashear 1, 660 ft fr n&wl's 131-ac tr parcel 4, Charles Lockhart sur, abnd 8510 ft.

Jackson County—Stewart: Humble's Copsey 2, 660 ft fr wl, 3300 ft fr sl 676-ac tr, George Sutherland sur, abnd 6998 ft.

Jackson County—Collier: Texas Co.'s Bolling-Collier 5, 365 ft fr sel, 3014 ft fr nel of 186-ac tr, James Kerr sur, 5½-in 2468 ft, abnd 2468 ft.

Jim Wells County—Seeligson: Transwestern's Seeligson 3-B, 727 ft fr el, 2996 ft fr sl sec 64, 1318-ac lse, H. D. Koopman sur 235, 6-in 6182 ft, perf 6124-30 ft, flow 141 bbls, 3/32-in, td 6249 ft.

Karnes County — Hondo Creek: Phillips' Beaham 1, 330 ft fr ne & sel's lot 12, T. J. Devine subdvn Carlos Martinez sur, abnd 6800 ft.

Karnes County—Hobson: Seaboard's Fertsch 2, 500 ft fr s&wl's 100 ac lse Don Erasmo Seguin Gr, 5½-in 4034 ft, perf 4030-33 ft, flow 86 bbls, ⅛-in, td 4034 ft.

La Salle County—Washburn: Quintana's South Texas Syndicate 22, 2500 ft fr el & 1400 ft fr nl E. M. Dull sur 86, abnd 5810 ft.

Jackson County—Mayo: Texas Co.'s McCrory 1, 660 ft fr n&el's s 184-ac GF&MT Simons sur, 5½-in 5459 ft, perf 5397-5405 ft, 5415-20 ft and 5435-42 ft, flow 73 bbls, 3/32-in, td 5459 ft.

LOWER TEXAS COAST WILDCATS

Jim Wells County—Failure: Humble's San Antonio Joint Stock Bank 1, 595 ft fr sl, 732 ft fr wl 525-ac lse, Marcelino Lopez Gr, abnd 6015 ft.

Karnes County — Discovery: Transwestern Oil Co.'s Sellers 1, 660 ft fr ne&nwl's 128-ac tr blk 3, Shaw & Harris subdvn Victor Blanco gr, 7 mi se Runge, Humble farmout, 5½-in 4194 ft, perf 4122-23½ ft, flow 38 bbls, 13/64-in, gor 25,210-1 with 958,000 gas, tp 1525, cp 1625, opens Porter field.

Refugio County—Discovery: P. R. Rutherford's Huff 1, 342 ft fr sl, 330 ft fr el combined 71-ac, Edward Perry sur, 1½ mi se Inari, 5½-in 5115 ft, sand 5035 ft, perf 5035-38 ft, 3,000,000 gas, 3/16-in, td 7135 ft. Opens gas field.

San Patricio County—Discovery: John T. O'Neil's Welder Heirs 1, 2700 ft fr wl, 2810 ft fr nl 2000-ac lse, Victoriano Tares and Pedro Villareal sur, 1½ mi sw Angelita field, 5½-in 6887 ft, perf 6840-46 ft, flow 52 bbls 57 gr dist, 2,350,000 gas 3/16-in, tp 2600, casing sealed, td 7123 ft. Opens gas-distillate field.

SOUTHWEST TEXAS

Starr County—Rincon: Continental's Garcia 4-d, 973 ft fr el, 1662 ft fr nl W. D. Stephenson sur 907, 6-in 3910 ft, perf 3897-3909 ft, flow 232 bbls, 3/16-in, td 3910 ft.

Starr County—North Sun: Sun's Laurel 1-B, 500 ft fr w'ly wl, 1179 ft fr s'ly nl 401-ac lse, La Sal Colorado gr, 5½-in 4557 ft, perf 4545-48 ft, flow 126 bbls, 9/64-in, td 4557 ft.

Webb County—Dulup: Dulup Oil Co.'s Puig Bros. 5, 330 ft fr wl, 818 ft fr n&sl's blk 79, Edginton Mineral usbdvn Albercas de Arriba gr, abnd 1836 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Failures: Hamill & Smith's Dinn 1, South Kohler area, 330 ft fr n&wl's nw sw Mrs. M. J. Morales sur 666, A-1871, abnd 3715 ft.

Quintana's Welder Heirs 2-B, 660 ft fr nel & 1150 ft fr sl 820-ac lse, Seale & Morris sur 229, A-579, abnd 4000 ft.

Texon Royalty Co.'s Benavides 1, 446 ft fr ne&sl's blk 25, El Mesquite gr, A-612, abnd 3510 ft.

LaSalle County — Failure: Progress Petroleum's Zuehl 1, 330 ft fr el & 1320 ft fr nl n 320-ac D. M. Murphy sur 148, A-1063, abnd 5715 ft.

Live Oak County—Failure: Hickok & Reynolds and Adams & Lyles' Alamo Lumber 1, 660 ft fr wl on line between combined lots 235 & 236, Rafael Alcantora sur 339, A-997, abnd 3504 ft.

Starr County — Discovery: Baldridge & King's Edgerton 1, 330 ft fr s&wl's share 66, porcion 80, J. A. de la Garza Falcon gr, 210-ac lse, 5½-in 1269 ft, perf 1222-25½ ft, pump 25 bbls, td 4510 ft. Opens Edgerton field.

United States Wildcat Starts

ARKANSAS

Calhoun County: Placid Oil Co.'s Freeman-Smith 8, nw ne 8-15s-14w, dr.

Placid's Gorth et al 1, ne sw 35-14s-15w, dr.

Placid's Southern 1, se sw 22-16s-13w, rig.

Columbia County: J. R. Hayden, Tr.'s Runyan 1, nw nw 14-16s-21w, dr.

Hempstead County: Barnsdall Oil Co.'s B. Schultz 1, e½ ne ne 34-13s-26w, lcn.

Union County: Lion's Union 1, ne se ne 14-17s-13w, rig.

Curtis Kinard et al's Teal 1, nw sw 11-19s-12w, to deepen.

CALIFORNIA

Colusa County: Shell's Buttes Comm. 1, nw 2-15-1, Marysville area, lcn.

Fresno County: R. S. Lytle's 68-20F, 20-20-16, Guijarral Hills area, rig.

Standard's P. V. 62-29F, 29-20-16, Guijarral Hills area, rig.

Honolulu Oil Corp.'s 42A-26, 26-29-21, Cymric area, lcn.

Honolulu's 62-26, 26-29-21, Cymric area, lcn.

Honolulu's 62A-26, 26-29-21, Cymric area, lcn.

R. M. Kiesau's 1, se sw se 24-28-28, Kern River area, lcn.

Los Angeles County: General Petroleum Corp.'s Mendota, ne ne 22-3-16, Rice Canyon area, lcn.

Anderson - Pritchard Oil Co.'s Anderson-Pritchard-Ramsey 1, sw nw sw 24-2-17, Chatsworth area, rig.

Signal Oil & Gas Co.'s Willows Comm. 1, 125 ft n 400 ft w intersection west bank Santa Ana River n/l Pacific Coast Highway, 19-6-10, Newport Beach area, lcn.

San Joaquin County: Amerada's Comm. 10-1, ne sw sw 10-4-7, Lodi area, grade.

ILLINOIS

Clay County: J. V. Canterbury et al's Klinger 1, sw sw nw 36-5n-8e, lcn.

Clinton County: Eason - Moulton's Breese State Bank 1, nw sw sw 36-3n-4w, dr.

Edwards County: Skelly and Nelson Dev. Co.'s Gumbrell 1, se se sw 3-1s-10e, lcn.

Lawrence County: Jarvis Bros. & Marcell's Breen 1, nw se se 25-2n-12w, lcn.

Madison County: S. A. Pearce Trustee's Goodwin 1, c w½ se nw 28-5n-10w, lcn.

Marion County: Big Chief Drlg. Co.'s Hones 1, se sw se 22-1n-2e, lcn.

St. Clair County: N. W. Whitton's Rapp 1, sw sw se 13-1s-9w, lcn.

Wayne County: Rea & Powers' Powless et al 1, ne sw 13-1n-5e, dr.

White County: D. Miller Drlg. Co.'s Coleman 1, ne se sw 6-4s-11e, dr.

INDIANA

Posey County: Rhodes & Cochran's Dierlan 1, c s½ se ne 3-6s-12w, lcn.

KANSAS

Barber County: Pryor, Lockhart & Brue's Massey 1, c se ne 27-30s-15w, bldg road.

Cowley County: Adair & Morton's Woner 1, ne se sw 29-30s-4e, rust.

Douglas County: Holmes et al's Eisle 1, c nw nw 9-14s-21e, lcn.

Ellis County: Darby Petroleum Co.'s Spilker 1, swc 1-13s-20w, mat.

B & R Drlg.'s Leiker 1, c n½ nw nw 14-15s-18w, dr.

N. Appleman and Harbar Drlg. Co.'s Ranch 1, 19-11s-18w, mim.

McPherson County: Helmerich & Payne and Auto Ordnance's Kumli 1, c w½ nw nw 6-18s-5w, c & p.

Helmerich & Payne and Auto Ordnance's Palmquist 1, c e½ ne nw 6-19s-5w, c & p.

Pratt County: Champlin's Allen 1, swc 15-27s-12w, dr.

Rice County: W. N. Bartlett's 1-A Schmidt, c w½ se se 16-18s-10w, dr.

Mid-Plains and Zephyr Drlg. Co.'s Sangster 1, c e½ se nw 13-19s-8w, dr.

Rooks County: Carter's Bigge 1, c sw sw 10-7s-18w, lcn.

Stafford County: Falcon-Seaboard's Bagley 1, nec 24-23s-11w, lcn.

J. H. Hershey's Ahnert 1, c n½ nw ne 3-23s-13w, dr.

KENTUCKY

Crittenden County: Rex Pyramid et al's Drenner 1, 12-K-19, dr.

Henderson County: Cal Star Pet. Co.'s Domiott 1, 23-Q-21, dr.

Muhlenberg County: R. Holbert's Kennedy Bros. 1, 21-I-28, lcn.

Union County: Sinclair Prairie's Hunter 1, 3-O-18, lcn.

Webster County: H. L. Hunt's Raines 1, c ne 16-M-22, dr.

Indiana Farm Bureau's Chessine 1, 9-N-24, lcn.

George Anderson's A. B. Sellers 1, 14-N-24, lcn.

SOUTH LOUISIANA

Cameron Parish: Pure's State-Snake Lake 1, e of Grand Lake in east edge of parish, 3650 ft s and 100 ft e of n c 26-13s-3w, lcn 9500-ft test.

NORTH LOUISIANA

Bienville Parish: Placid Oil Co.'s Nebo B-1, sw ne 13-15n-7w, rig.

Caddo Parish: Durbin Bond's Simpson 1, sw se 17-16n-15w, lcn.

Catahoula Parish: Sinclair Prairie's State 1, nw se 30-9n-7e, dr.

California Co.'s Eckhardt 1, ne ne 12-9n-7e, mim.

Claiborne Parish: Benedum-Trees Co.'s G. H. Vaughn 1, approx c ne nw 23-23n-5w, rig.

Concordia Parish: Gulf's Nelms 1, sw ne 10-1n-8e, lcn.

Jackson Parish: Mid-Continent's Tremont 1, se ne 31-15n-3e, lcn.

Morehouse Parish: McElreath et al's Bonita 1, nw nw 11-22n-9e, lcn.

Red River Parish: Cryer and Reese R. Bramburg 1, se ne 27-12n-9w, lcn.

Sabine Parish: Seaport Corp. et al's Phares 2, ne nw sw 4-5n-12w, lcn.

Tensas Parish: Carter's Shelley 1, sw ne 19-11n-10e, mim.

Webster Parish: J. I. Roberts et al's Garland 1, ne se 24-22n-9w, lcn.

East Carroll Parish: Hunt's Continental 1, nw sw sw 77-22n-13e, spud.

West Carroll Parish: R. W. Williams' Marston 1, ne sw ne 14-19n-10e, dr.

Continental's Bruce 3, ne ne ne 2-20n-9e, dr.

MICHIGAN

Clinton County: W. H. Colvin's State 1, nw se se 14-5n-1w, dr.

Leelanau County: Copeland and Barton's Overby 1, se se ne 5-29n-12w, lcn.

Saginaw County: Hagan & Hagan's Gerken 1, e½ se se 12-11n-5e, lcn.

Kent County: Three A Drilling Co.'s Barnes 1, c sw sw 32-5n-9w, rig.

NEW MEXICO

Lea County: Skelly Oil Co.'s State 1-T, c se se 10-21s-34e, lcn.

OKLAHOMA

Comanche County: Stanolind's Jones 1, c se ne 11-3s-10w, lcn.

Amerada's McLaughlin 1, ne sw ne 25-3s-9e, lcn.

Logan County: Big Chief Drlg. Co.'s Jones 1, c ne ne 4-16n-1e, lcn.

NORTH TEXAS

Archer County: Gulf's Parrish 1-A, 1980 ft out nwc ATNCL sec 97, 7 mi se Mankins, lcn 5000-ft test.

Clay County: Consolidated Oil Co.'s J. A. Gilbreth 1, 467 ft out swc ne¼ sec 1, San Augustine University sur A-403, lcn deep test.

Young County: British-American Oil Prod. Co.'s M. A. Barrett 1, 330 ft out sec n-86 of s-225 of e 450 acres Ed W. Sergeant sur A-253, lcn 5600-ft test.

Standard of Texas-Hanlon & Buchanan's R. T. Wells 1, 495 ft snl and 1400 ft ewl sec 738, TE&L Co. sur, cem 10-in 267 ft on Miss. test.

WEST TEXAS

Andrews County: Humble's W. F. Carter 1, c se sw PSL 23, blk A-46, lcn 8500-ft test.

WEST CENTRAL TEXAS

Coleman County: Sohio Producing Co.'s Weatherred 1, 660 ft from m/s/n and 819 ft from m/e/w lines GH&H 69, blk 2, lcn 3300-ft test.

Jones County: Everts Dr. Co. et al's Commons 1, 330 ft out nwc lot 8, blk 4, A. W. Hill sur, lcn 1775-ft test.

Parker County: Continental's Davidson 1, 2309 ft nsl and 330 ft ewl T&P 242, 4 mi sw Poolville, lcn 6500-ft Ellenburger test.

Taylor County: F. W. Merrick's Wells 1, 330 ft s and 1880 ft e of sec lot 6, leag 124, but in T&P 27, blk 17, lcn 3000-ft test.

LOWER TEXAS COAST

Bee County: Mills Bennett's Hall 1, 1320 ft fr se&swl 775-ac tr, J. W. Williamson sur, sw Pettus field, lcn.

DeWitt County: Humble's Burns 1, Terryville area, 660 ft fr nw&swl of T. C. Fort sur, A185, 64-ac lse, 6 mi sw Brushy Creek field, lcn.

Jim Wells County: Humble's Adams 1, Magnolia City area, 1980 ft fr sl & 660 ft fr el 1494-ac lse, Marcelino Lopez sur, 3 mi ne Magnolia City field, lcn 6000-ft test.

Jim Wells County: A. H. & C. L. Rowan's Bagnall 1, 330 ft fr sl & 1320 ft fr el 184-ac tr, share 5-A, Los Presnos de Abajo gr, lcn 5700-ft test.

SOUTHWEST TEXAS

Duval County: Edwin Cox and Jake Hamon's Hoffman 1-B, 1977 ft fr ne & 2002 ft fr sel BS&F 122, 650-ac lse, 1½ mi sw Tarancahuas field, dr.

Hiawatha Oil & Gas Co.'s Southland 24, 330 ft fr el, 660 ft fr nl sec 6, Ball Rch subdvn Santos Flores gr, 1 mi n Southland field, spudding 6000-ft test.

Sun's Cauling 7, 2640 ft fr nw, 660 ft fr nel Bennie Lee sur 6, 649-ac tr, lcn 4500-ft test.

SOUTH CENTRAL TEXAS

Guadalupe County: Leigh J. Sessions' Mattke 2, 330 ft fr se&swl 100-ac lse, Y. P. Alsbury sur, 2 mi s Elm Creek, ru.

TEXAS GULF COAST

Brazos County: Phillips' Schoeps 2, 200-ac tr, E. M. Millican sur, lcn 4000-ft test.

Burleson County: B. C. Bukowski's Cade 1, 75-ac tr, W. J. Porter sur, 5 mi sw Caldwell, lcn 6000-ft test.

Fort Bend County: Jack W. Frazier and R. N. Ranger's Robinson 1, 80-ac tr T. Robinson sur, A-311, 4 mi se Katy field, lcn 7500-ft test.

Montgomery County: Albert Plummer and D. B. McDaniel's Keystone Mills 1-A, 430 ft fr el & 900 ft fr nl sec 4, 648-ac tr, Ashby S. James sur, (TNO) sec 4, 12,500-ft Wilcox test in Conroe field.

Washington County: Champlin Refining Co.'s Dallmeyer 1, 43-ac tr, 2 mi n Burton, sur 7, lot 2, Von Vieberstein sur in J. B. Miller Lge, lcn 7000-ft test.

Squeaks from the Bull Wheel

Pretty Fix

"Can you fix this fender so my husband will never know I bent it?"

"No, but I can fix it so that you can ask him in a few days how he bent it."

Talking Back

"You deceived me before we were married. You told me you were well off."

"I was, but I didn't know it."

Both Escaped

"Mable, who broke that chair in the parlor last night?"

"It just collapsed all of a sudden, Pop, but neither of us was hurt."

No Libel

"I've been getting a lot of threatening letters through the mail recently."

"There's a law against that. Have you any idea who's sending them?"

"Sure. The Woofus Furniture Company."

A Sensible Style

"Who invented high heels?"

"A woman who was once kissed on the forehead."

The Military Mind

The sergeant was asking recruits why walnut is used for the butt of a rifle.

"Because it has more resistance," volunteered one man.

"Because it is more elastic."

"Wrong!"

"Perhaps it's because it looks nicer than any other kind," said another timidly.

"Don't be so dumb," snapped the sergeant. "It's simply because it is laid down in the regulations."

Sound Advice

"Doctor, my wife tells me that I talk in my sleep. What should I do?"

"Nothing that you shouldn't."

Delicate Approach

It was the usual rush and hustle of washing and shaving in camp in the early, still dark hours. One recruit turned to his neighbor and remarked: "I say, Bill, have you got a good memory for faces?"

"Yes," replied Bill, from behind his towel.

"Well, see if you can remember your own when you shave it. I've just broken your mirror."

His Excuse

A private, obviously a newcomer to the armed ranks, lounged against the guardhouse, puffing a cigarette. A captain passing by stared at him incredulously. "Can't you see that sign ten feet in front of your eyes," cried the captain, "which distinctly says 'no smoking'?"

"Captain," he said, "if I could read that sign, I'd be in the Navy now."

Ignorance

"Mrs. Rollinginwealth has more money than she knows what to do with."

"Really. Such ignorance must be bliss."

Appropriate

A man who had made his fortune in the liquor traffic built himself an imposing house out of his profits. He wanted a name for the new mansion, and consulted a friend about it.

"I want a fancy name," he explained, "some hall or other, you know."

"Something appropriate, I suppose?" remarked the friend. "Why not call it Alco Hall?"

Plans Upset

Daughter: "Do you know what kind of man I want to marry?"

Mother: "I think so; just exactly the kind of man I wanted—until your father came along and spoiled all my plans."

TOP YOUR TREE

with a forged steel UNIBOLT Coupling and blanking plug—you'll speed up the taking of bottom hole pressures, running paraffin scrapers, bottom hole chokes, etc.

•

THORNHILL-CRAVER COMPANY
HOUSTON

UNIBOLT
THE ONE BOLT COUPLING

BOWEN OVERSHOT

SIMPLE • STURDY
EFFICIENT • COMPACT
VERSATILE

This indispensable tool has established an enviable world wide reputation by satisfactory performance.

Illustrated model catches and packs off pipe and tool joints and mills over pipe. Single bowl models and other multiple bowl models available.

Patented

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P. O. BOX 1025 HOUSTON, TEXAS
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Through Supply Stores Anywhere in U. S. A.

When your Salt Water Disposal Well will apparently take no more, don't spend thousands re-working the hole. Spend a few dollars to clean it out by CALLING CAVINS to get that water going in again!

THE CAVINS CORP. CAVINS
HOUSTON, TEXAS
Branches: Dallas Corpus Christi Odessa Pampa Kilgore, Tex. Lake Charles La. Seminole Okla. Elmwood Ark. Artesia N. Mex.
OIL WELL CLEANOUT TOOLS

Notes for the Equipment Buyer and User

Pump Drive

THE ALDRICH PUMP COMPANY

The Aldrich Pump Company, Allentown, Pannsylvania, announces a new drive arrangement for Aldrich inverted vertical triplex pumps. This design provides for built-in pump gearing with extended pinion-shaft, allowing for direct connection through flexible coupling to motor, or for v-belt drive to prime mover.

The pump can be supplied with any of three drive arrangements: direct to gear-head motor, through chain, flat or v-belt drive from extended crankshaft to prime mover, and through built-in pump gearing. The outfit finds applications in pipe-line service, water flooding, central hydraulic pumping systems, or similar services where high-pressure pumping is required.

Gearmotor

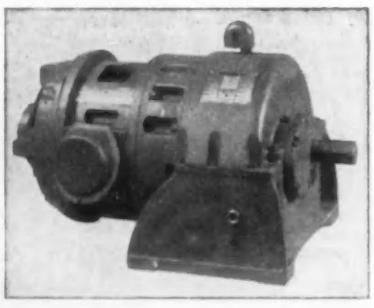
WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, announces a new line of horizontal parallel shaft type Gearmotors which meet speed reduction requirements for a wide variety of industrial applications over a range of 1 to 75 horsepower.

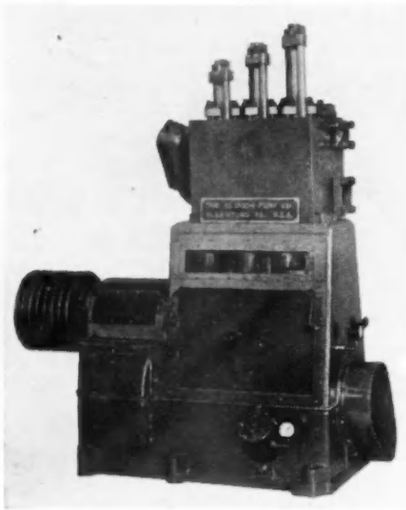
The use of adaptor castings between motor and mechanical parts allows the use of all standard Westinghouse NEMA frame motors with each type of unit, and types of motor construction can therefore be readily changed to suit varying service conditions if necessary in the field. The design of the motor-adaptor assembly being common between unit types, such assembly can be readily shifted between unit types to meet changes in speed requirements. Many working parts including gear sets being common to all three unit types of a given rating, replacement part programs are held to a minimum.

Gears and pinions in the new gearmotors are of .40-.50 carbon steel, and are given special heat-treatment before hobbing. This process produces a tapering hardness from surface to core, and results in tough, impact-resisting teeth. Gears and bearings are lubricated by a positive splash system, and new case design allows oil to circulate freely at all times.

The new gearmotors also feature compactness and improved foundation stability through heavy exterior ribbing of the housing at each mounting hole.



Westinghouse Gearmotor

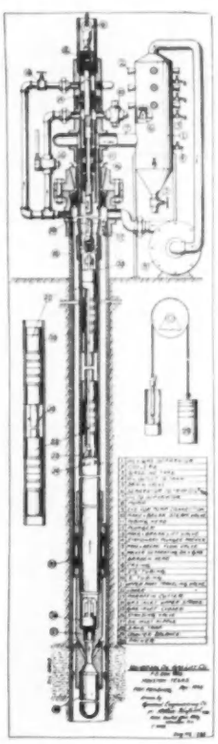


Aldrich Pump Drive

Combination Pump, Gas Lift

UNIVERSAL OIL-GAS LIFT COMPANY

Universal Oil-Gas Lift Company, Houston, has announced the development of a combination pump and gas-lift unit. In bringing wells on production, the manufacturer claims, the plunger and standing valve arrangement can be first run in the well on a sand line and used as a swab, cutting paraffin from the tubing walls during the process. When used as a normal method of lift, this plunger and valve unit is operated from a string of sucker rods, producing pumping motion by means of a gas-operated piston and cylinder arrangement at the well head. When in position in the well, the traveling-valve assembly becomes a sliding valve, opening and closing ports in the tubing that introduce lifting gas from the casing annulus.



Essential parts of this unit are the standing valve and sand trap assembly, the dual plunger and traveling valve arrangement and the pumping piston and related connections at the well head. Fluid entering into the oil string must pass through passages inclined at an angle to the sand trap. Here sand is deposited out and the entrance force is cushioned, thus relieving the standing valve of much abuse. The traveling valve is composed of two hollow plungers, suitably ringed, connected by a length of hollow tubing. The ball and seat is located on top of this assembly. When pumping, this operates similar to the common working barrel pump; under these conditions the gas ports are always between the two plungers, sealing off the gas from the casing. When desiring to utilize gas to lift the fluid the traveling valve is raised above the pas ports, thus letting gas in from the casing. To close off this gas, the valve is lowered.

At the surface, the rod string is balanced by weights hung over a pulley arrangement placed over the well. The pumping motion is obtained by an attached piston to the polished rod that works in a cylinder above the stuffing box. A connection is made from the casing to a point below the piston, thus providing gas under pressure to lift the rods. A make-and-break valve in this line controls the pumping cycle and stroke.

Ridge Tool Company Moves Into New Plant

The Ridge Tool Company, Elyria, Ohio, has recently moved from its original factory site at North Ridgeville into completely remodeled and modernized plant and offices in the city of Elyria. Increased business has for some time made expansion of manufacturing facilities necessary; plans have been sped up in the past few months because of increased jobber and war orders. The new factory provides five times the working space of the old and permits greater manufacturing efficiency.

National's Torrance Plant Gets E Award

The Torrance, California, plant of The National Supply Company was awarded the Army-Navy E production award for excellence in war production on May 19.

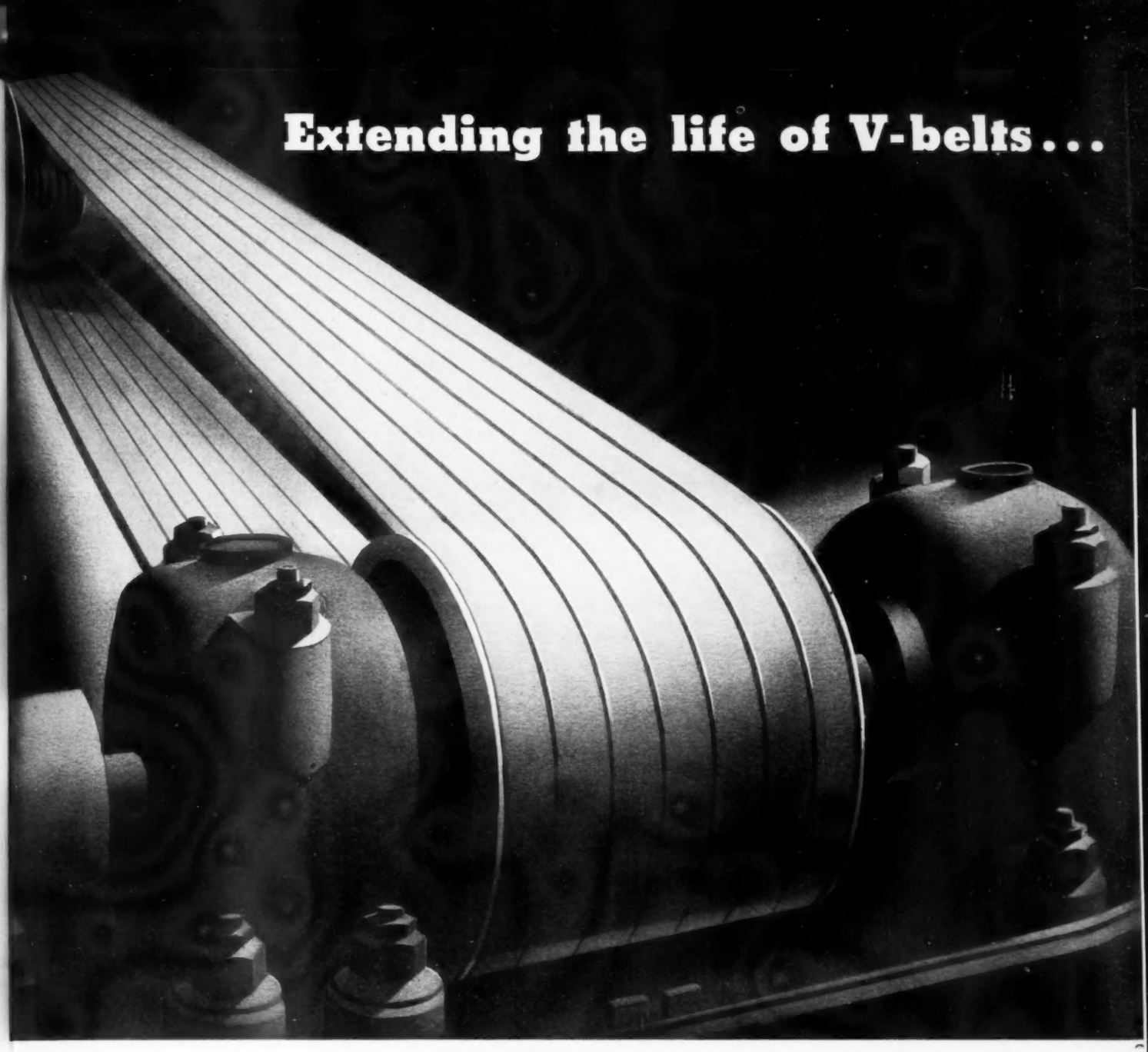
Kerotest Manufacturing Company Gets Gold Star

Kerotest Manufacturing Company, 2525 Liberty Avenue, Pittsburgh, has been awarded its first gold star for the Maritime M Pennant awarded some time ago. The star is for continued outstanding production achievement of war supplies.

Pulley Lagging

Victor Balata & Textile Belting Company, 345 W. Hubbard Street, Chicago, has published a new bulletin describing widely extended uses for Grip-On pulley lagging. This lagging has a pile-face surface designed to promote better traction and longer belt life. The bulletin fully describes the lagging and methods of applying it to pulleys.

Extending the life of V-belts...



Information supplied by "The Oil Weekly"

The following suggestions are offered as an aid to obtaining longer service from the V-belts used to drive various kinds of oil field equipment:

1. Do not force belts over sheaves when installing. Sheaves should be slacked off until belt goes on easily.

2. Be sure that sheaves are large enough for specific belt sizes. Undersized sheaves wear belts rapidly.

3. Provide adjustment facilities. Allow 1/5 motion for installation slack and 4/5 for take-up of service stretch.

4. Insure correct alignment, and do not permit belt to rub on adjacent objects.

5. Distribute drive tension equally across all belts.

6. Avoid double flexure of belts when installing idlers. Where possible use grooved idlers inside belts. Flat idlers used outside should have a diameter 50% greater than recommended minimum

7. Do not use belt dressing. Clean belts on clean smooth sheaves provide proper friction grip.

8. Do not expose belts to excessive heat, direct sunlight or extreme cold. Insure proper ventilation for drives.

9. Store belts uncoiled and protect them from acid fumes, smoke and dust.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

ARMY E NAVY

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Mo-lyb-den-um Company
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MOLY

For more than 31 years we have dedicated our equipment, experience and workmanship to the accomplishment of

Fire Control in the Oil Fields

Today, all these facilities plus our patriotic determination to help win the war are dedicated to

Fire Control in the U. S. Navy

Meanwhile, we will continue to furnish Orbit Valves to the Oil Country to the limit of our ability.

The Orbit Geared Master Valve

Fortunately, your Orbit Valves were originally designed and always built for long life under serevest operating conditions.

If you have any questions regarding the care and maintenance of your Orbit Valves, write us.

OIL WELL IMPROVEMENTS CO.

TULSA, OKLAHOMA

Men in the Industry's News

JACK P. HAYS, for the past six years associate professor of petroleum engineering at Texas A. and M. College, has resigned to go with Seaboard Oil Company, Continental Building, Dallas, Texas, as petroleum engineer.

Hays is a graduate of petroleum engineering from the University of California, and prior to joining the Petroleum engineering staff at Texas A. and M. College was district petroleum engineer for Shell Oil Company in Louisiana and South Texas areas.

ELMER W. POLLOCK, cashier of First National Bank & Trust Company, Tulsa, has been elected vice president and assistant treasurer of Deep Rock Oil Corporation.

L. S. REID, former professor of chemical engineering at University of Oklahoma, has joined Southern Natural Gas Company at Birmingham, Alabama.

C. H. RANKIN, formerly with Continental Oil Company, is now a consulting geologist in Denver, Colorado.

A. E. HIGGINS, vice president and sales manager of Pittsburgh Equitable Meter Company—Merco Nordstrom Valve Company, Pittsburgh, has been commissioned a major in the Air Corps. A veteran of World War I, Higgins has held a reserve officer's commission for many years. Prior to associating with the Pittsburgh firm, he served as secretary for the Natural Gas Department of the American Gas Association. He qualified as an Army pilot in 1918, and has flown his own plane throughout his business career, and has over 6000 hours solo credit.

GORDON LEFEBVRE has been elected president and general manager of The Cooper-Bessemer Corporation, Mount Vernon, Ohio. He succeeds B. B. Williams who will remain active in the corporation, continuing his duties as chairman of the board.

Gordon Lefebvre

B. B. Williams

FRANK E. BERGERON has been appointed California sales manager for Baash-Ross Tool Company, succeeding B. Bronzan who is now devoting his full time to general managership of the organization. After graduating from UCLA, Bergeron accumulated three years mining experience before coming with the Baash-Ross organization in 1935. After several years in the shop, he went into sales office work, followed by a four-year period as field sales representative.

GEORGE G. HARRINGTON joined Hunt Tool Company, Houston, May 15, as vice president in charge of engineering and research. Following 19 years of service in the engineering department of Reed Roller Bit Company, the last 11 years of which he was chief engineer, Harrington recently opened a consulting engineering office in Houston. He is a graduate of the University of Texas, B.S., M.E., is a member of Tau Beta Pi engineering fraternity and an honorary member of the mechanical engineering fraternity Pi Tau Sigma. He is chairman of the Texas Chapter of the American Society for Metals.

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